Editorial Comment

Small businesses in the reconversion period

The cosmetic industry in line with all other industries has done its fair share of war work. Many have converted their plants 100 per cent to war work while others have partially converted, some even producing small parts alongside of their cosmetic manufacturing. The majority of these conversions would be classed as small businesses.

Donald M. Nelson, chairman of the War Production Board, said recently that "small business must be given the first opportunity to reconvert to peacetime production in the post-war period, asserting that he believed that small business should be given top priority when surplus materials over and above the stockpile needed for war are released."

Mr. Nelson considers that the most important thing in this country is the small business. He stated that it does not want, or need a WPA organization: it wants an opportunity to use its own initiative and ingenuity.

Other speakers at this meeting in Washington, D. C., of the 14 regional directors of the Smaller War Plants Corporation were Representative Wright Patman who promised the regional directors 100 per cent cooperation from the House Small Business Committee; Senator James E. Murray, who congratulated Maury Maverick, director of the SWPC, on "the opportunity you have to be of real service to the country as a whole. Only small, independent business is genuinely competitive," he continued. He, too, assured the regional directors that they would have the fullest cooperation of the Senate Small Business Committee.

"I admire the vigorous way you have taken hold of your job," Senator Murray continued, "Small business must be preserved if we are to have free enterprise."

Mr. Maverick promised that SMWC under his direction would be conducted as a strictly non-political organization. He considers his work—and rightly so—a vital program and he was very glad that the co-founders of the SWPC had voiced their intention of cooperating.

Plans for restyling well under way

Already repackaging of lines for the post-war period is well under way. Although glass has been the standby for packaging most cosmetics, there is one line, we have heard, that is planning to redo its line completely in plastics. The sturdy solid feel of glass however will prove difficult to unseat.

the American Perfumer and ESSENTIAL OIL REVIEW

COSMETICS · SOAPS · FLAVORS

EST. 1906

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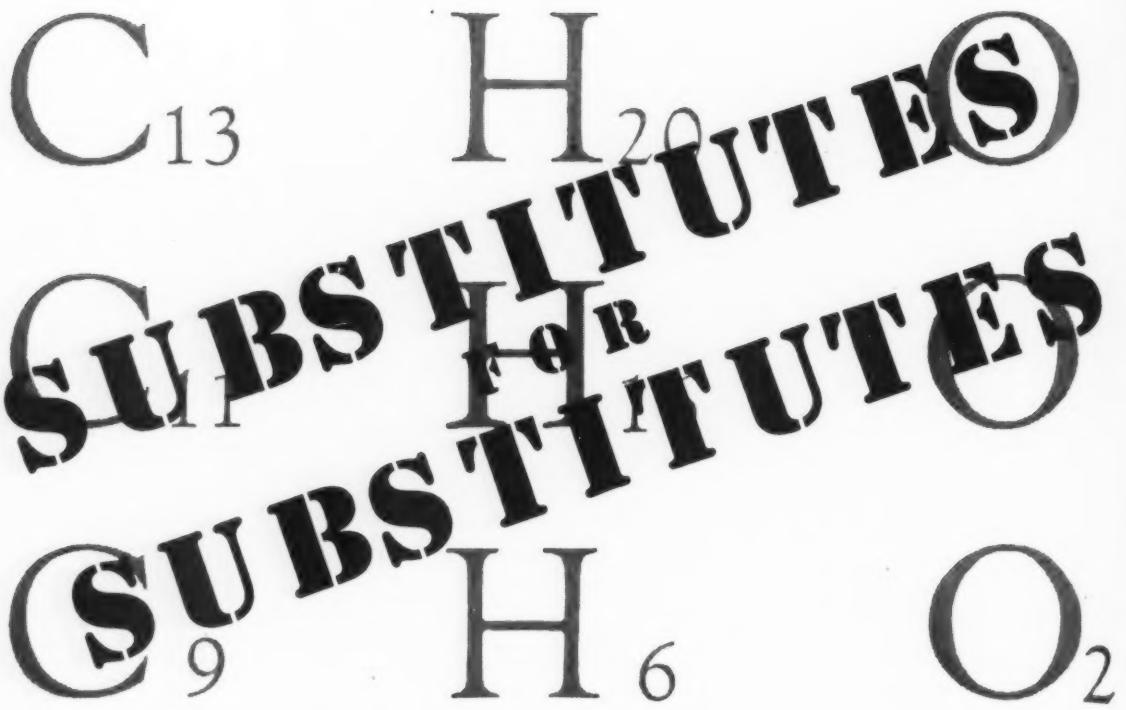

There was a time when life for the research chemist was comparatively simple. He'd create a new formula for grateful clients, or aid in bringing costs down by suggesting a change in basic ingredients. However, that was all — in what seems — the long ago.

Today, he is a much harassed man.

Not only are vital ingredients denied him — unavailable or price prohibitive — but the substitutes that he so painstakingly created to take their place, have themselves been placed on shortage or priority listings. Today, he must concentrate the full measure of his skill in the creation of *Substitutes for Substitutes.*

Many manufacturers, fighting to keep production moving, have turned to us with their problems. We have, in most cases, been able to supply the necessary help. Our research chemists have, for more than a quarter of a century, made the Florasynth name a byword in the industry, for the creation of effective and successful synthetics. So much so, that our reproductions of natural floral absolutes and true essences have long been accepted as *primary essentials* in the manufacture of countless successful perfumes, lotions and other toiletries.

★★★ *FOR VICTORY BUY U. S. WAR BONDS AND STAMPS* ★★★

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desiderata

Comment on interesting new chemical developments and their application to cosmetics and toiletries.

by MAISON G. DENAVARRE

FLAVOR KICKBACK

A manufacturer of flavors was making a banana flavor in which *amyl acetate* was an important ingredient. Business kept getting better and better. He was using amyl acetate from one of the reputable flavor supply houses and the results were four star excellence. Still business kept getting better. Then one day he decided to stop paying the fancy price for amyl acetate and buy some of the stuff you see quoted at a fraction of the price in a weekly market report—the kind used in paint, etc. On one drum alone he saved a hunk of dough. *The whole batch of flavor went to one customer but it was spoiled.* Something he didn't find out until the customer raised the dickens. The entire batch had to be dumped—it was worthless. There is a moral there, Mister flavor maker. There are amyl acetates *and* amyl acetates, all good pure stuff, but some kinds are terrible in flavor. Ever hear of the *isomeric* amyl alcohols? They produce *isomeric amyl acetates*. Some isomers are better than others. The trick is to get the right one.

CUTTING DOWN ON BEESWAX

If you are making a cold cream with 10 per cent or more of beeswax, you might be interested in learning how to stretch your beeswax without resorting to so-called synthetic beeswaxes. Try cutting down on the beeswax to about six per cent or so, add about 15 per cent of a good absorption base, adjust the mineral oil, leaving the other things as they are, make the cream in the same old way. Now this may not work to perfection with your particular formula, but it is worth a whirl. It has been tried and found pretty good in my own laboratory. The resulting cream has less beeswax odor and just about the same consistency and color. It can be made pretty white if you select your absorption base properly. Such a cream can also be made from a concentrate plus petrolatum. There are a lot of angles that might be tried, just in case. . . .

M. G. DeNavarre at work in his laboratory

WICK-TYPE ROOM DEODORANTS

A new approach to deodorizing the atmosphere in a room after smoking, cooking or at any time when you want to remove undesirable odors is to put a deodorant into a bottle containing a wick, just like a lamp or lantern. The contents slowly evaporate into the air and do their job. A patent has been granted on one product containing chlorophyll. But formaldehyde in an aromatic base is a good standby. It is reactive, forms a gas quickly thus becoming more miscible with the obnoxious odor and in addition it has some antiseptic properties if used in sufficient quantity. As a starter in this type of product, try a water soluble perfume plus from four to eight ounces of formaldehyde (40 per cent) per gallon. A penetrant to aid the solution to wet the wick is also desirable, but avoid ingredients that tend to collect on the wick, thus plugging it up and rendering it inefficient.

CORRUGATION IN MEXICO

An enquirer asks in so-many words, why have there been so few corrugated cartons in Mexico even before the war —worse so now? There is supposed to be plenty of power and labor. Yet no good corrugated boxes. Are our American box makers asleep? Here is something to think about with an eye to post-war opportunities, corrugated box maker.

WHICH ABSORPTION BASE IS BEST?

The answer to this would be like answering to "which political party is best?" The two types on the market presently consist of the one based on hydrocarbons with sterols, their esters together with other ingredients derived from lanolin or otherwise and the second type depending on hydrocarbons plus the fatty acid derivatives of polyhydroxy compounds, such as the oleate of propylene glycol, glycerine, sorbitol, etc. Both types consist essentially of hydrocarbons to which a small amount of "active material" is added. Each works better with hydrocarbons *plus* some lanolin.

However, the polyhydroxy fatty acid esters are stronger emulsifiers, even if used in a lesser concentration than the "sterol concentrate." The resulting emulsions will hold more water and hold it better.

The proponents of the sterol type claim that due to presence of sterols in their product, it is better for the skin. I doubt it. I don't think anyone has ever produced a series of experiments suitably controlled to demonstrate the value of sterols over, say glyceryl mono-oleate. Neither side can

Bringing

AID AND COMFORT TO OUR FIGHTING FORCES

TOUGH Sheffalloy Collapsible Tubes, *in enormous quantities*, are doing just that—bringing aid and comfort to our fighting forces! They're proving the dependable vehicle by which vital medicinal and pharmaceutical ointments are safely brought to the farthest corners of the earth, thru the torrid temperatures of the south seas to the frigid sub zeros of the arctic circle. Sheffalloy Tubes are *making good* on the fighting fronts, giving more protection than is ever needed for products for home consumption. Manufacturing so many of these better tubes is our contribution to Victory.

Sheffalloy TRADE MARK REGISTERED
SHEFFIELD PROCESS TUBES

NEW ENGLAND COLLAPSIBLE TUBE CO.

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THE WILCO COMPANY, 6800 McKINLEY AVE., LOS ANGELES 1

therefore claim the "best product" for neither has demonstrated this "betterness" through controlled scientific experiments. Would that they did so we could know for sure! As it is, you buy on price or ability to produce a stable and satisfactory cosmetic or drug.

ALCOHOL SUPPLY

There is going to be no extra supply of alcohol for some time apparently. If you haven't converted in part at least to the use of isopropyl alcohol, or the combined use of a mixture of SD alcohol and isopropyl with solubilizers, it is an idea you should do more than dream about.

CETYL ALCOHOL

When cetyl alcohol became short, two alternates were suggested. One is stearyl alcohol while the other was a lanolin derivative. The latter has been withdrawn. Now there are at least three other sources of a cetyl alcohol replacement that users claim to be successful. Write us if interested.

HAIR LACQUER

Reports of dermatitis resulting from use of hair lacquers continue to appear in medical and lay literature. Manufacturers of hair lacquer cannot be warned too strongly to avoid any shellac *substitute* for this purpose. Use only refined shellac which you must obtain from the War Production Board. Enough shellac is being allocated for this purpose. To make a lacquer, you of course know that the shellac must be solubilized first. Borax or sodium hydroxide or both may be used. Use no more ammonia than necessary. When applying for your allocation of shellac, be sure to state that substitutes cannot be used because they irritate the skin. Watch out for excess alkali because it can be just as irritating as other things.

TITANIUM DIOXIDE

If you are not very well stocked with this item and are using it, you will feel a little let down to learn that the titanium dioxide order supposedly dying on February 29, may be continued. It's back to zinc oxide if you have to, which is available up to 2000 pounds without asking for an allocation.

REPLACEMENT BULLETIN READY

The Replacement Bulletin No. 12 has now been published and brings the former Bulletin No. 11 up-to-date as of time of writing. Many new products have been developed to replace those allocated for war supply only and in short supply. The price of the new Bulletin is $1.00. We regret that due to paper shortage, etc., we cannot supply these free.

Questions and Answers

489 SOYBEAN OIL

Q.: We are making a preparation containing soybean oil. After the product is made, it has a fish-like odor. We suspect it is turning rancid. Can you suggest a suitable preservative?

D. R.—Delaware.

A.: Even the most highly refined soybean oil has a characteristic odor, referred to sometimes as "fishy." This is particularly noticeable if the oil has been heated or if the oil is emulsified. Shampoos made with soybean oil have this same fault. While the oil may be turning rancid, as it will, it is quite probable that it is the oil itself that should be changed. Why not try cottonseed or peanut oil? If you want a preservative, try propyl gallate 0.1 per cent or any of several proprietary antioxidants, the names of which are sent to you under separate cover.

490 CARBON DEODORIZER

Q.: What carbon is used for deodorizing isopropyl alcohol? Please give us full details of the procedure.

C. H.—New Jersey.

A.: Under separate cover we are giving you the names of the carbon most commonly used for this purpose. It is quite impossible to deodorize the straight alcohol for any length of time since it seems to oxidize again in the air. It is easier to deodorize the alcohol if it is diluted with water, especially if the water concentration is high. More complete information is being sent to you under separate cover. We also suggest that you read the last several issues of the American Perfumer under the heading Desiderata where suggestions in modifying this process have been given.

491 COCOANUT FATTY ACID

Q.: We are making a shampoo from cocoanut oil fatty acids. We can no longer get these and would like to know if there are any substitute materials.

V. T.—Arizona.

A.: One of the best replacements for cocoanut fatty acid is oleic acid which is practically as difficult to get as your original material. However, there is one type of oleic acid which is double distilled from tall oil and which is ex-quota. It is very light in color, bland odor and is essentially oleic acid, but it contains about three to five per cent of rosin acids. This material should be given a trial. We understand that there are one or two so-called technical fatty acids which might also be available. The name of the supplier of these is also being sent to you under separate cover.

492 LANOLIN SUBSTITUTE

Q.: We are unable to get lanolin. We use it in a hand lotion. Can you suggest a substitute?

L. R.—Vermont.

A.: There has been no lanolin set aside for cosmetic use since about last September. There seems to be little prospect of any relaxation of the restrictions at least for several months. We would suggest that you replace your lanolin with a suitable absorption base that is rich in lanolin and lanolin derivatives. You might also try a lanolin replacement composition which we are sending to you under separate cover.

493 BABY OIL

Q.: *In one of your issues of the magazine you printed a suggestive formula for antiseptic baby oil as follows: Oxyquinoline Benzoate 0.2 per cent Maleic Anhydride 0.1 per cent, White Mineral Oil (65-75) 45.0 per cent, Refind Peanut Oil 54.7 per cent. In your opinion would it be possible to eliminate the peanut oil and substitute mineral oil, making 99.7 per cent of the formula mineral oil? Would the other two items be soluble?*

C. P.—Illinois.

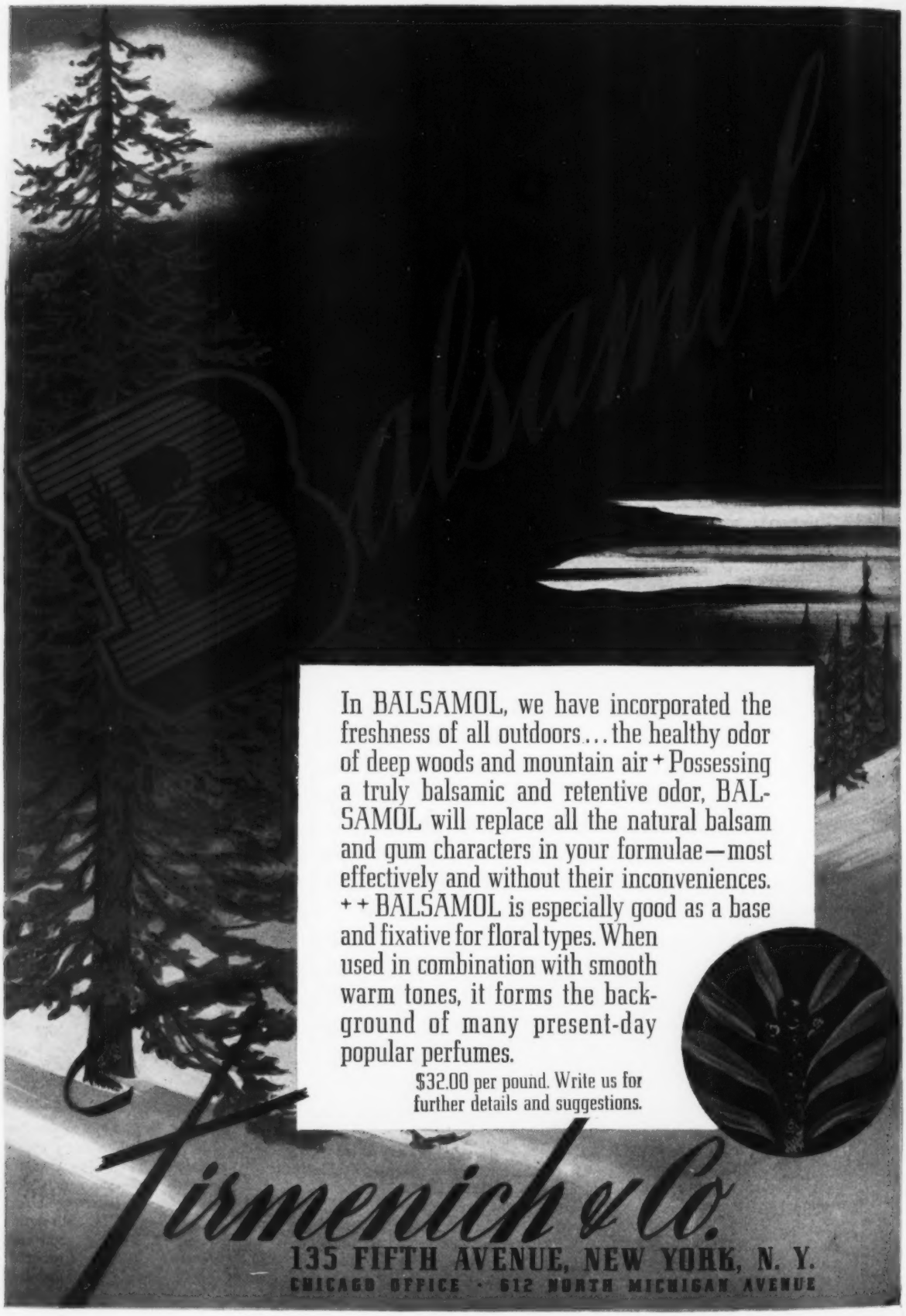
A.: It is doubtful if the antiseptic and the antioxidant are soluble in straight mineral oil. We would suggest that you dissolve these substances in a minimum amount of vegetable oil, then dilute with mineral oil. It is our frank opinion that a baby oil based entirely on mineral oil is not the best product that can be made.

494 TALLOW

Q.: *In making a toilet soap, we develop a bad odor due to cheap tallow. Could you give us an idea about the method we should use to avoid the smell even after perfume has been added?*

R. M.—Venezuela.

A.: The obvious thing is to use better tallow or to select a more appropriate perfume. It may be that the tallow is rancid or becomes rancid after saponification, in which case you may try a little sodium silicate solution which is supposed to possess some antioxidant properties, although probably mild. We still think that the best thing to do is to select a better tallow.


Balsamol
In BALSAMOL, we have incorporated the freshness of all outdoors... the healthy odor of deep woods and mountain air + Possessing a truly balsamic and retentive odor, BALSAMOL will replace all the natural balsam and gum characters in your formulae—most effectively and without their inconveniences. + + BALSAMOL is especially good as a base and fixative for floral types. When used in combination with smooth warm tones, it forms the background of many present-day popular perfumes.
$32.00 per pound. Write us for further details and suggestions.
Firmenich & Co.
135 FIFTH AVENUE, NEW YORK, N. Y.
CHICAGO OFFICE · 612 NORTH MICHIGAN AVENUE

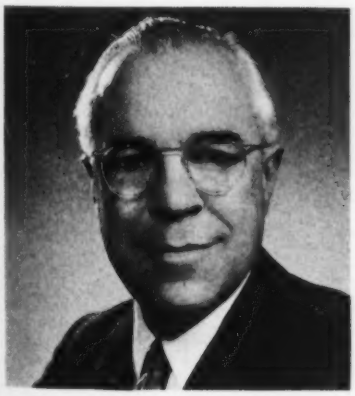
Antonio Stradivari in his work shop looks down upon the Stradivari Orchestra under the direction of Paul Lavall which features Matchabelli perfumes each Sunday

Stradivari—The Perfume Symbolized by the Radio Orchestra

The radio orchestra with its enchanting, hauntingly beautiful music adds a new note to perfume merchandising . . . This beauty of Stradivari violins characterizes the perfume

by LEO V. TALAMINI

Executive Vice-president, Prince Matchabelli, Inc., New York, N. Y.



Leo V. Talamini, executive vice-president, Prince Matchabelli, Inc., New York, N. Y.

THE MERCHANDISING appeal of great perfumes has been through the sense of smell and sight. The skill of the artist-perfumer made the perfume as pleasingly fragrant as possible. This supplemented by a handsome bottle plus an attractive package, was presented with most appealing and elusive illustrations by the advertising department in the various smart magazines.

Prince Matchabelli now goes one step further; he is appealing through the sense of hearing. Through the medium of radio and his Stradivari Orchestra, he is using the enchanting music of the violin to interpret the beauty and character of his perfumes; and in particular his Stradivari.

Every Sunday afternoon at 12:30 the Prince Matchabelli radio program finds its way into the homes of the millions of NBC listeners—from New York to California. The response to these programs has been overwhelming. The quantity and caliber of the fan mail coming back to Prince Matchabelli—highly complimentary letters praising with enthusiasm the Stradivari violins, Stradivari perfume, the music selections, the arrangements, the soloists and even the commercials, are evidence of the high esteem in which Stradivari—perfume and orchestra—is regarded as unquestionable evidence of the popularity of this program.

Shortly before the program is to go

on the air, a wealth of violins arrive under guard—the famous Stradivari instruments. For the most part these famous violins are borrowed from the fabulous Wurlitzer collection of Stradivarii.

When Prince Matchabelli first thought of the Stradivari Orchestra, the problems to be overcome in borrowing so many valuable and genuine Stradivari instruments each Sunday seemed almost insurmountable. Collectors, owners and dealers, however, have been most cooperative, and thus have made this program possible.

Like all fine works of art, each violin created by Antonio Stradivari has its own character and personality, its own fascinating history and proud name. The "Earl" Stradivari was named for the Earl of Westmoreland, founder of the Royal Academy of Music in London, who treasured it as one of his most prized possessions. This particular violin, the Earl, is the instrument that is used in the solo each Sunday afternoon on the Stradivari radio program. Other equally fine instruments in the orchestra are the "Des Rosiers," the "Van der Leyen," the "Jean Becker," the "Otto Booth," the "Adam," the "General Kyd" and the "Paganini."

The promotional name tie-in between the Stradivari violins and Stradivari perfume is an obvious one, but there is an even more subtle and basic interrelationship between all music and all perfumes, for perfumes have mood and character much akin to the varied moods and characters of musical compositions and musical instruments.

For example, a bolero played with a predominance of brass and tympanny might very well interpret a high-tension and exciting perfume; the old world charm of a minuet played on a cello could conjure up the mood of a sweetly-sentimental perfume; the feeling of the chic, the smart, the modern in perfume might be achieved through woodwinds and saxaphones doing Gershwin's "Rhapsody in Blue" or Shostakovich's Sixth Symphony.

To illustrate how closely the sense of hearing and smell are related, one veritable occurrence may be told; the recovery of the famous $100,000 "de Medici" Stradivari violin. As the story goes, this violin was stolen from its case in the de Medici Museum in Florence, Italy. The curator was accused of the theft, but was not arrested because of lack of evidence. For three years this accused man seemed to live only for one thing . . . to listen to broadcasts of music by all violinists, great or unknown. He was listening for the stolen violin. One day his long vigil was rewarded. This penniless curator heard the violin music he had been waiting for. He immediately set out on foot for Stockholm, Sweden. One year and one half he trudged, each day nearer the beloved and precious violin. He sought the certain concert violinist and told him he was using the famous "de Medici" Stradivari violin. The instrument was identified and returned to the museum. When questioned as to his mysterious powers of identification the curator simply said that whenever he had heard this particular violin he had seemed to smell the fragrance of cassia blossoms. On hearing the Stockholm broadcast, he had experienced the same phenomenon and determined to search out the stolen violin to clear his own name of guilt. In medicine this peculiar association of fragrance with sound or music is known as Synesthesia.

Stradivari Perfume

Very common indeed is the subtle relationship between music and perfume; both creating a mood for the appreciation of beauty and emotion. It was this close relationship that inspired Prince Matchabelli, Inc. to its first radio venture. So successful was the first effort that the Spring series of four programs resulted. That series in turn became a

Duchess of York line of Prince Matchabelli

full-fledged 26-week NBC series, and one of the most popular programs of the finer music type.

The radio audience is lavish in its praise and has shown its appreciation of both the program and the perfume by purchasing Stradivari with no other recommendation than the radio program. "If the program typified the perfume, that is all I need to know," writes one purchaser.

Although the direct response from listeners is most gratifying, the interest and enthusiasm of national clubs and organizations is even more exciting. For instance, the CIAA (Coordinator of Inter-American Affairs) has asked permission to rebroadcast the Stradivari Orchestra to South America in line with an extensive "Good Neighbor" campaign. The OWI has requested the Stradivari Orchestra for rebroadcast to civilian population abroad. The Special Services division of the Army is now auditioning the program and hopes to be able to feature it for rebroadcast to our Armed Forces all over the world. The National Federation of Music Clubs, represented by its President and Radio Chairman, heard the program and were so impressed that a letter was sent immediately recommending the program to some 250 member music clubs all over the United States.

By usual radio standards, the Stradivari Orchestra is a decided newcomer, having had its opening performance on December 20, 1942. However, it has already taken its place among the ten top symphony orchestra programs. In a nation-wide popularity poll, conducted by *Radio Daily*, the Stradivari Orchestra was the only radio newcomer to break into the select circle of ten favorite symphony programs. This poll represented the balloting of the nation's leading radio editors and columnists, who in turn represent the great nation-wide audience of radio listeners.

According to Frank Burke, editor of *Radio Daily*, the appearance of such a new program among the first ten winners adds evidence to the fact that there exists today a definite and enthusiastic trend in public taste toward the popular classic and symphonic music.

The Prince Matchabelli radio brochure containing the programs of the different selections broadcast each Sunday have been distributed to the visitors at the radio programs. Planned to serve as an announcement of the series and a souvenir program for the studio audience, this little brochure with cover showing Antonio Stradivari at his work bench bending over one of his masterpieces has skyrocketed in importance until now it is being demanded by the hundreds of thousands —300,000 to be exact.

This very attractive brochure is printed on Stradivari rose colored paper. The print that decorates the front cover was adapted from a famous painting of the master at work. The inside of the brochure spotlights, in picture, the "Earl" Stradivari violin, which is featured in solo on each broadcast. Network, station and time information plus a listing of music for four current concerts are carried on the third page. The back cover shows the Prince Matchabelli crown bottle and Prince Matchabelli signature.

This radio venture has proven a decided success as is shown by the many customers, thrilled by the program, who have visited the perfume bars to purchase Prince Matchabelli perfume. Thus an artistic triumph has also become a sales triumph. There is no doubt of the pulling power of the radio for quality perfumes with the Stradivari Orchestra — a quality program.

The Abano products of Prince Matchabelli

Short Adages

by R. O'MATTICK

DR. ROWMATERAL wore out his best slide rule in the worst way figuring out his I. I. & V. T. Return. But he sent in his return early and by registered mail, too, as he expects a refund of $16.17, which he hopes will reimburse him for this slide rule.

* * *

The Income Tax certainly got into his formulas via his hair or into his hair via his formulas. We saw a notation for one of his perfume oils for a hair preparation:

1. Net amount of perfume oil used	746 oz.
2. Less 5% for loss	37.3 oz.
Item 1 minus Item 2	708.7 oz.
Plus Item 3: alcohol (what an Item—it hasn't come in yet!)	
Total amount Item 1 and Item 2 while waiting for Item 3	708.7 oz.

* * *

We saw a full page ad in *Life* magazine, advertising a book on how to learn Spanish. The first lesson starts off this way:

¿Es la gardenia un animal?
Oh, no, la gardenia no es animal.
¿Es la gardenia una flor?
Si, la gardenia es una flor.
¿Produce música la gardenia?
No, la gardenia no produce música.
La gardenia produce perfume.

Right from the start we get into perfumes in *Una invitación para conversar en español*. Now anyone can pick it up: go down to Latin America and come up again with a boat-load of orders for rhodinol, vetivert and what haven't you.

* * *

But what we like most about Spanish is that in a question the question-mark is at the beginning of a sentence as well as at the end of it. When a customer writes a letter in Spanish from Caracas, Montevideo or Lima, and asks a question, he is polite enough to warn you that he is only asking by starting right off with a question mark. It would be a good custom for customers to follow who writing from Chicago, South Bend, Little Rock and elsewhere:

¿Have you musk ambrette?
¿Can you quote on Otto of Rose Bulgarian?
¿When will you ship the containers?
¿Why haven't we received the talc?
¿etc, etc, etc?

* * *

Did you have your Biodyne R today? We received half a dozen inquiries asking whether the R in Biodyne R stands for Dr. Rowmateral. The good Doctor refused to comment.

Col. Bogert quotes from *The Daily News Record* of New York of 1934:

"The advertising man writes a good deal about the glories of his merchandise, but the consumer gets going when he smells something he wants. His nose knows!"

"Men marry perfumes rather than women today. They take out a license when they encounter an extract they think they could endure at a breakfast table every morning for 40 years."

"People who object to paying about $60 a month to the landlord will pay that much for a bottle of perfume" (of course it depends on what people and what perfume. This observation is our own.—R. O'Mattick).

* * *

Ye Revised Compleat Angler
(with apologies to Izaak Walton)

Offer a Bite

confirmation = sure catch
repeat order = starfish
returned shipment = dogfish
complaint = catfish
quick buyer = snapfish
prompt payer = goldfish
cheerful buyer = sunfish
slow payer = flounder
confusing buyer = cuttlefish
bragging buyer = red herring
small buyer = sardine
buyer from New England = codfish
buyer from the West = salmon
one who buys for resale = sailfish
high priced specialties = caviar

* * *

One of the best get-togethers ever, according to Pat Chouli, is a BIMS reunion. Liquid refreshments, a good dinner, good company, no speeches, motions or resolutions.

* * *

Otto Stock, from whom we haven't heard for some time, was grinding yellow crystals in a mortar (they looked like his entire stock of musk ambrette) and in walks Sand L. Wood, singing heartily:

"Lay that pestle down,
Lay that pestle down."

* * *

Our friend, Robert Swain, who does those clever placards "Here's How," that riders of the New York Subways read, when they have left their copy of THE AMERICAN PERFUMER at home or in the office, has a very good one on cosmetics.

According to him and according to every book on cosmetics that we ever read, "Cosmetics were found in Egyptian tombs as far back as 5000 B. C."

To paraphrase the Great Bard:

"The evil that men do lives after them—
The goods are oft interred with their bones."

* * *

Robert also says that "women from 25 to 45 are biggest buyers of face cream, face powder and rouge. Women under 25 buy more lipsticks, deodorants and leg make-up." All a woman of 45 has to do to pass for a Miss under 25 is to buy more lipsticks, deodorants and leg make-up. But we don't want her (and neither do you) to buy less face cream, face powder and rouge.

"The Government has told us to stop making our 'Salute d'Amour' perfume, but they see no objection to our 'Purple Passion'!"

Preparative Methods for Aromatic Aldehyde Syntheses

A detailed survey of direct and indirect methods of preparation . . . Application of methods . . . Reactions with Grignard reagents . . . Sonn-Müller, Stephen and Rosenmund methods discussed

by J. ELMORE JONES

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ALL ALDEHYDE SYNTHESES in the aromatic series can be divided conveniently into two groups: 1. methods by which the aldehyde group is introduced directly into an active position in the aromatic nucleus, and 2. indirect methods by which a group already present or one which can be introduced into the desired position is modified.

Since the direct methods fail when *meta*-directing groups are present, they can be applied only to hydrocarbons and to compounds containing groups with *ortho-para* directive influence. Of the three direct methods, the Gattermann and N-methylformanilide syntheses give the best yields and are to be preferred to that of Reimer and Tiemann.

ADVANTAGES OF INDIRECT METHODS

The indirect methods often afford yields approaching those given by the direct syntheses and have the advantage of making available aldehydes in which the functional group is located in positions other than those accessible by direct substitution. The Sonn-Müller, Stephen and Rosenmund methods of reducing acid or nitrile substituents are the more useful, whereas the methods typified by the halogenation and hydrolysis of toluene, the oxidation of toluene and the oxidation of benzyl alcohol are usually applicable only in specific cases. In the more highly substituted molecules encountered in organic synthesis the methyl or hydroxymethyl groups necessary for the latter types of reactions are generally absent, and their introduction would involve intermediates from which the aldehyde could be prepared by other methods.

DIRECT METHODS

Gattermann's original method, in which carbon monoxide and hydrogen chloride were allowed to react with an aromatic hydrocarbon in the presence of aluminum chloride, was quite successful, but its failure in the case of phenols and phenol ethers led to the substitution of hydrogen cyanide for carbon monoxide. This modified procedure, which has found extensive use, is usually employed with ether or benzene as a solvent in the presence of zinc chloride or aluminum chloride as a catalyst and at temperatures ranging from 25 deg. for phenolic compounds to 100 deg. for hydrocarbons.[1, 2]

With meta-dihydroxy compounds no catalyst is necessary; the imino formyl chloride (I) in equilibrium with hydrogen cyanide and hydrogen chloride reacts readily with resorcinol in ether solution, forming the insoluble aldimine hydrochloride which is easily hydrolyzed to the aldehyde. Other phenols

$$ArH \xrightarrow[HN=CH-N=CHCl \quad (II)]{HN=CHCl \quad (I) \quad or}$$

$$\begin{matrix} ArCH=NH\cdot HCl \\ \text{or} \\ ArCH=N-CH=NH\cdot HCl \end{matrix} \xrightarrow[H+]{HOH} ArCHO$$

and phenol ethers necessitate the use of a catalyst such as zinc chloride or aluminum chloride; the former is more desirable since it has less tendency to cause the cleavage of phenol ethers. In reactions in the presence of a catalyst the intermediate is chloromethyleneformamidine (II), a double compound consisting of two moles of hydrogen cyanide and one of hydrogen chloride[3].

APPLICATION OF DIRECT METHOD

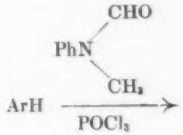
The application of this method to hydrocarbons afforded Hinkel and coworkers good yields of the corresponding aldehydes only under forcing conditions. The temperature was raised to about 80 deg., excess aluminum chloride was used as a catalyst and solvents of high chlorine content such as tetrachloroethane and *ortho*-dichlorobenzene were employed. Chloromethyleneformamidine was the intermediate in this case also, high temperatures being necessary to liberate it from its aluminum chloride complex in the absence of ethers and to increase the speed of its combination with hydrocarbons.

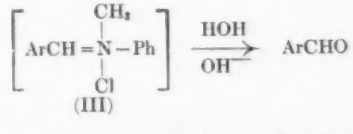
In order to avoid handling liquid hydrogen cyanide, Adams replaced it by zinc cyanide[3]; thus both hydrogen cyanide and zinc chloride were generated in the reaction mixture. Generally this modification does not affect the yields adversely, but the use of other cyanides as a source of hydrogen cyanide has not been very satisfactory. In some cases the addition of small amounts of potassium chloride exerts a catalytic effect.

PRODUCTION OF ALDEHYDES

The production of aldehydes by the action of N-methylformanilide or formanilide in the presence of phosphorous oxychloride has been known for some time, but only recently has the method found extensive application. The patent literature lists numerous examples of its use in introducing nuclear aldehyde groups into phenol ethers and tertiary amines. Aromatic hydrocarbons containing particularly reactive positions such as anthracene, pyrene, acenaphthene and 1,2-benzanthracene have afforded aldehydes in yields in excess of 70 per cent[4].

The reaction is usually carried out by mixing the reagents and allowing them to stand at room temperature or by





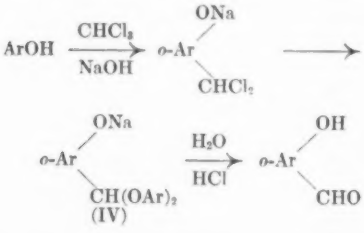
heating them at 100 deg. Often the addition of a solvent such as ether, benzene or *ortho*-dichlorobenzene is

necessary in order to effect solution of the aromatic compound. The mixture, which probably contains (III) as the intermediate, is hydrolyzed by means of sodium acetate or alkali, and the aldehyde is isolated by an appropriate procedure.

REIMER-TIEMANN REACTION

The Reimer - Tiemann reaction has the advantage of making available certain *ortho*-hydroxyaldehydes which cannot be prepared conveniently by other methods. It is carried out by adding chloroform to a refluxing alkaline solution of the corresponding phenol. After acidification the reaction mixture is steam-distilled and the aldehyde isolated from the distillate [5].

Because of undesirable side reactions of which the most important is the reaction between the intermediate salt of *ortho*-dichloromethylphenol and unchanged sodium phenylate to form compounds of the type (IV), yields

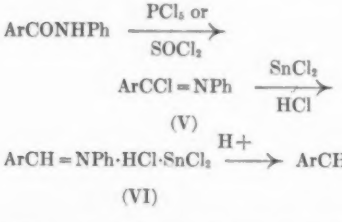


(IV)

greater than 35 per cent are rarely obtained. This limitation is a serious disadvantage from the preparative point of view.

INDIRECT METHODS

The introduction by Sonn and Müller of stannous chloride for the reduction of imide chlorides provided an excellent indirect method for preparing aldehydes from aromatic acids. The imide chloride (V) is usually prepared by the action of phosphorous pentachloride or thionyl chloride on the anilide, after which the crude chloride is added to an anhydrous solution of stannous chloride in ether saturated with hydrogen chloride. The double salt (VI) which precipitates is hydrolyzed directly to the aldehyde. This reaction is somewhat

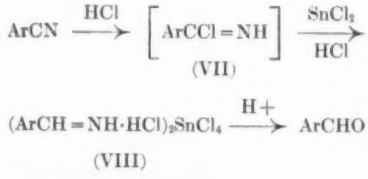


(V)

(VI)

subject to hindrance but even so the yields are rarely less than 50 per cent [6].

The Stephen procedure resembles the above method closely in that it is a reduction of an imide chloride (VII) by stannous chloride. A nitrile is added to the ethereal solution of stannous chloride and the precipitated double salt (VIII) is hydrolyzed by dilute acid. The reaction is not as general as Stephen at first claimed and it is much more subject to hindrance than the Sonn-Müller method [7]. This method has found recent application in the synthesis of compounds related to thyronine.



(VII)

(VIII)

ROSENMUND METHOD

The basis for the success of the Rosenmund method is the highly selective reducing action of hydrogen on acid chlorides in the presence of palladium precipitated on barium sulfate. Ordinarily, the catalyst is "poisoned" by adding a sulfur-quinoline preparation to prevent the reduction of the aldehyde formed, but numerous reductions have been effected in which no poison seemed necessary. To obtain the best results, it is generally necessary to purify the acid chloride carefully. The reduction is usually carried out in boiling xylene and the course of the reduction is followed by titrating the hydrogen chloride liberated. Substitution and hindrance have little effect on the reduction, and the conditions are mild enough so that nitro groups are not reduced [8].

Since aromatic acids are readily available by general preparative methods, the Sonn-Müller and Rosenmund methods are particularly valuable. The yields from the two procedures are comparable and except in isolated instances either method can be used.

GRIGNARD REACTION REAGENTS

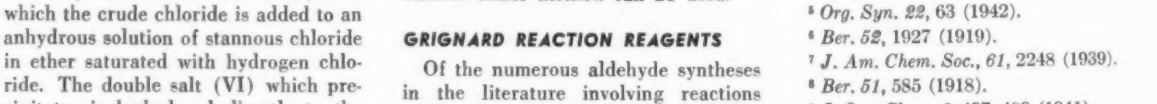
Of the numerous aldehyde syntheses in the literature involving reactions with Grignard reagents, only four have been used with much success in the aromatic series. These involve treatment of the Grignard reagent with one of the following reagents, followed by hydrolysis: 1. ethoxymethylene aniline ($PhN{=}CHOC_2H_5$), 2. ethyl orthoformate, 3. disubstituted formamides, e.g., N-methylformanilide, and 4. carbon disulfide. In the last method the dithio acid obtained is treated with semicarbazide with formation of the semicarbazone of the corresponding aldehyde, which is hydrolyzed to the aldehyde.

Smith [9] found the first of these to be the most reliable method but it has the disadvantage that ethoxymethylene aniline is difficult to prepare and is expensive. The next two are quite successful in certain cases and are generally superior to the last method, which gives rise to undesirable side reactions and is subject to hindrance.

USE OF CHLOROMETHYL COMPOUNDS

A reaction which employs the relatively easily prepared chloromethyl compounds is that introduced by Sommelet in which the chloromethyl compounds are boiled with hexamethylenetetramine in alcoholic solution. The aldehyde is produced directly and often crystallizes from the solution. The application of this method is limited by the availability of the chloromethyl compound and by the fact that it may fail in extremely hindered cases.

The most recent method involves the decomposition of arylsulfonacylhydrazides by alkali carbonates in ethylene glycol or glycerol solutions at 160 to 200 deg. The decomposition presumably takes place via the intermediate benzoyl diimine (IX) which loses nitrogen [10].



(IX)

The use of this procedure in syntheses in the thyronine series indicates its preparative value although other methods starting from aromatic acids are more desirable where they are successful.

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6. *Ber. 52*, 1927 (1919).
7. *J. Am. Chem. Soc., 61*, 2248 (1939).
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Replacements Bulletin

In response to hundreds of requests we have revised the Replacements Bulletin.

Due to the difficulty of obtaining materials, government restrictions upon the use of paper, the increased costs of all production we are compelled to charge a fee of $1.00 per copy to cover costs.

War-Time Merchandising in Britain

Limitation on percentage of sales allowed in England as compared to limitation on raw materials in U. S. affords U. S. advantage in quantity

by LYDDON GARDNER
Managing Director, Yardley, Ltd., London, England

THE lot of the British cosmetic manufacturer in war time is not a happy one. Those of us who have business connections with the United States know that the manufacturers there also have their full quota of worries, but it is doubtful if the American and British manufacturers fully understand each other's problems. I think there is a general feeling of envy on this side that so many perfumery and cosmetic articles are still selling in the States in such large quantities, while the American manufacturer, as represented by the politicians, would appear to be jealous that some precious, scarce raw materials for which he may be rationed, should be used in Perfidious Albion for purposes not strictly connected with the destructive munitions of war.

This is one of those typical examples of misunderstanding between two communities which should very easily be removed by a frank statement of facts. A comparison between conditions covering the cosmetic industry in both countries will show very clearly why the British manufacturer is likely at the moment to be somewh touchy about any criticism of his activities that reaches him from the other side of the Atlantic.

In the United States sales in the perfumery and cosmetic field are only limited by the ability of the manufacturer to turn out the goods. In Britain our sales have, since May, 1940, been limited by law. At the present moment the permitted figures are 65 per cent of pre-war sales of face, talc and bath powders, and 50 per cent of everything else. The American manufacturer can make up his sales with any article that he is able to produce. In England, the manufacture of any spiritous perfumery, brilliantines or lacquer for the nails is now prohibited because the basic ingredient for these things is available only under Lend-Lease. Nor is it permitted to ship to South America

Lovely Yardley shop on old Bond Street, London, still stands despite several bombings

—where British and American manufacturers are still in competition—any form of greasy cream such as night cream, cleansing cream or cold cream, because these also require a high percentage of Lend-Lease products. Perfumery is also prohibited for the same reason. It is not known where the South American ladies get their perfumery and creams, etc., but it is doubted here that they are all manufactured south of the Panama Canal.

Both American and British manufacturers have continual worries to obtain enough supplies, the great difference between us in this case being that the American is worried because his stocks may prevent him from doing a bigger than pre-war trade, while the British manufacturer cannot always find stocks to do his 50 per cent quota.

Shortages and control of labor is also a big factor in Britain today. The unhappy manufacturer of cosmetics is not allowed to employ any woman between the ages of 18 and 41 years, except those women who have families and are therefore not easily available for more than a few hours a day.

For the woman-in-the-street, an expression which always sounds so much less complimentary than the masculine equivalent, it is not so easy to give a comparison for both countries. From the advertisements we see in the American magazines it would appear that the American shopper still has a large range of perfumery and cosmetics to tempt her. The English woman knows that she cannot buy anything but creams, powders, lipsticks and rouges, and she considers herself lucky if she finds any of those she wants. When she does she buys quickly before someone else gets the articles, without worrying too much about the manufacturer's name on the label.

Everyone in Britain realizes the necessity of all the rules and regulations that affect our lives, even if we do sometimes disagree very violently with the way they are applied or administered by the powers-that-be; a state of mind which is no doubt as prevalent in America as it is here. We are not jealous of the fact that the cosmetic industry in America is easier than it is here, but if we do get a little envious now and again, well, that is just one of the weaknesses of human nature.

Hand Creams—Beautifiers and Protectives

One of the most important developments in the cosmetic industry is that of hand protective creams . . . Most hand creams formerly were for beautifying purposes

BEAUTIFUL HANDS beautifully kept can prove one of a woman's greatest assets. With this in mind, cosmetic houses should be quick to develop an educational program on "hand essentials" along with their numerous treatment courses, as this product will certainly prove a fast-selling item.

CLAIMS FOR HAND CREAMS

Hand creams are classified as cosmetic preparations which are applied to the hands to put them in better conditions. The claims made for hand creams, however, should be limited to beautifying or otherwise enhancing the appearance, or the product may be transferred over to the drug classification, and as such would require the qualitative statement of its composition on the label as well as comply with other drug sections of the Food, Drug and Cosmetic Act. The farthest that any manufacturer may go in his claims is the relief of minor roughness due to chapping.

Hand creams are usually modified vanishing creams or jellies or mucilages in which a proportion of oil may have been incorporated. The basic formula of vanishing cream, which is an oil-in-water emulsion, usually contains up to seven per cent water, which quickly evaporates, leaving a thin protective film on the skin. Pure stearic acid is combined with a small quantity of an alkali, such as sodium or potassium hydroxide or carbonate, triethanolamine, etc., to form a little soap; this, then serves as an emulsifying agent and stabilizer for the emulsion of stearic acid and water. This basic recipe is modified often by the addition of other stearates, cocoa butter, or lanolin; and glycerine and alcohol, bleaching agents or other liquids.

FOR DERMATOSES

Today hand creams are more important than ever before as a means of preventing occupational dermatoses, a disease which is one of the chief causes of industrial debility and absenteeism. Thus a change is necessary in the preparation of hand creams and in their requirements. The problem of caring for water-soaked roughened "dishpan" hands gives way to the need for adequate oil and grime cleansers which will be drastic enough in cleansing action, yet not too drastic in after-effects, and also these cleansing creams must take on the added quality of protection. Glycerine in these protective creams not only facilitates the removal of occupational grime, but also acts as a barrier to the deleterious action of various materials on the skin. It also acts as a plasticizing agent, solvent and dispersing agent, and last but not least it serves as an emollient to counteract the effect of harsh, skin-irritating substances encountered in factory work. Hence a large proportion of modern skin protectives employ glycerine as a most important constituent of the basic formulas. In newer uses, glycerine serves as a plasticizing and barrier material for protective clothing made from cellophane and the like. These last are especially valuable in the presence of dangerous chemicals and solvents as well as toxic gases.

CLEAR GELS FROM ALGINATES

A glycerine hand jelly can be made by dissolving sodium citrate in water, adding glycerine and a preservative and then stirring in calcium alginate preferably finely ground. With the correct concentrations a jelly will form in a few hours. Twenty grams of sodium citrate dissolved in one liter of water with 800 c.c. glycerine is sufficient to deal with 30 grams of calcium alginate.

Alkaline-earth alginates are insoluble in water. As a result, although alginic material is usually separated from seaweed in the form of the calcium salt, it has hitherto been necessary to convert it into the sodium salt or into a soluble alginate in forming viscous solutions and gels. It has, of course, been known for some time that certain sodium salts such as the carbonate and sesquicarbonate will react with calcium alginate to give viscous solutions but these are opaque because of the presence of an insoluble salt such as calcium carbonate.

It has now been found possible to produce directly from alkaline-earth alginates, clear viscous solutions or gels by the use of certain compounds capable of forming stable complex ions with alkaline-earth ions. Such salts are known in themselves: for example, it is known that sodium hexametaphosphate can combine with calcium ions, then by removing them as such by forming stable complex anions and, for example, prevent calcium carbonate or the like from being precipitated out of solution in water by the use of soap.

According to an invention by Allbright and Wilson, Ltd., and Charles W. Tod —English patent specification No. 555,940—a process of preparing a solution or jelly of an alkaline-earth alginate is characterized by introducing into the solvent salts capable of forming stable complex ions with alkaline-earth ions so as to effect solution or dispersion and gelling of the alginate without precipitating an insoluble alkaline-earth.

It has been found that sodium hexametaphosphate and sodium tripolyphosphate are effective for the purpose. Sodium citrate has also been found valuable in this connection.

It has also been found that alkali alginates themselves have the power of acting upon alkaline-earth alginates, forming hydrated gelatinous systems which are free from precipitated alkaline-earth compounds and which are therefore transparent, so that it is possible with the scope of the above invention, to use an alkali alginate such as sodium alginate along with the calcium alginate to help to produce from the calcium alginate a transparent jelly. While in this case, the use of sodium alginate is not altogether avoided, the quantity employed is reduced as compared with the use of sodium alginate alone.

Whatever the type of cream that may be used as a protection not only for the hands but for all exposed areas of the skin, there is one requisite that must be met and which in the past has caused many accidents—the cream must not leave the hands slippery, as a firm grasp is absolutely essential.

Detergents—Old and New

Increased production of synthetic detergents . . . Important soap substitutes facilitate many household tasks, prove valuable in agriculture, oil, paper and other industries

by L. F. HOYT

National Aniline Division, Allied Chemical and Dye Corp., Buffalo, N. Y.

THIS PAPER will be confined to a discussion of two types of detergents, alkali metal soaps and the new synthetic detergents.

Probably it is not generally known that synthetic detergents in a little over a decade have become "big business."

According to *Time* magazine for January 5, 1942, in which the newer synthetic detergents rated nearly a page of publicity, the production of synthetic detergents in the United States (which was stated to have been zero as recently as 1928) reached 100,000,000 pounds in the year 1941.

The special properties of the newer synthetic detergents which permit them to function admirably in situations in which soaps are ineffective give the synthetic detergents an importance and a consumer value out of all proportion to their current production tonnage which, according to the reported figures, is about 1/30th that of soaps.

The tonnage involved in the annual production of soaps is impressive even without including the various alkaline salts such as the carbonates, phosphates and silicates which are used in enormous amounts for detergent purposes.

U. S. SOAP PRODUCTION

The United States production of soaps of all kinds averages over 10,000,000 pounds for every working day and adds up to an annual production of approximately 3,250,000,000 pounds.

This is nearly one-third of the estimated world production of ten billion pounds and gives the United States first rank with a per capita consumption of 25 pounds of soap. United States soap production is divided approximately as follows: toilet soaps, 12 per cent; laundry soaps (bar soap, chips, flakes, granulated, spray dried soaps, washing powders, cleansers, etc.), 84 per cent; textile soaps, 2.3 per cent; and miscellaneous, 1.7 per cent.

It is interesting at this point to note the severity of the blow dealt to the United States soap industry by the war in the Pacific which abruptly cut off a large proportion of the imports of coconut oil. Over a period of several years, and irrespective of price fluctuations in oils and fats or of the excise tax imposed on coconut oil in 1934, the proportion of coconut oil to all other fats and oils used in soaps has persistently ranged between 23 per cent and 25 per cent. From 64 per cent to 66 per cent of the coconut oil imported in the past decade has been used by the soap industry. During 1941 the proportion so used is reported to have been even higher and to have amounted to nearly 70 per cent of the 680,000,000 pounds of coconut oil imported.

There is *no* natural domestic substitute for the lauric acid in coconut oil which is such an important factor in the satisfactory performance of modern soaps.

Where the water is hard, soap is a real problem. A convenient figure to remember is that approximately one ounce of pure dry soap will be used up by the calcium and magnesium salts in ten gallons of water having a hardness of only 100 parts per million (5.8 grains per gallon) as calcium carbonate.

United States Geological Survey Paper No. 658 covering public water supplies of the United States shows that out of a population of 57 million in the town and cities for which there is accurate water supply data, only 20,372,000 or less than 37 per cent of that population have available for household use water that would be classified as soft; i.e., with hardness of less than 60 parts per million or 3.5 grains per gallon.

Sea water which contains very large amounts of magnesium salts and lesser amounts of calcium salts has an average hardness of 6600 parts per million, as $CaCO_3$, and one gallon of it will consume over six ounces of dry soap.

Only those who have tried to use soap for toilet or laundry purposes in sea water can appreciate to the fullest extent the new synthetic detergents, some of which will lather and cleanse as well in sea water as they will in rain water.

SYNTHETIC DETERGENTS

The first attempts to provide better detergents date back well over 75 years when sulfonated olive oil was developed for use in the textile industry, mainly in the dyeing of Turkey Red. Sulfonated and sulfated oils, which function more as dyeing assistants and finishing agents than as detergents and the naphthenic acids developed about 1880 from Russian petroleum were the only surface active agents in use other than soaps up to the time of World War I.

About 1916 as a result of the fat shortage in Germany, research was stimulated to produce substitutes, especially for industrial purposes. The first result of this program was the development of the salts of alkylated naphthalene sulfonic acids which were introduced widely in place of soaps and sulfonated oils. The continuing use of these synthetic penetrants after the war aroused chemical industry to produce improved types. In the early 1920's Schrauth of the Deutsche Hydrierwerke developed the primary long chain alcohols by the hydrogenation of fatty acids or esters at high temperatures and pressures. Bartsch of the firm of H. T. Böhme prepared and marketed the sodium alkyl sulfate esters of the primary long chain alcohols, of which the most important and valuable is lauryl alcohol. These new products which were quickly accepted abroad and later in this country have many interesting and

Abridged form, as presented at the Meeting of the American Oil Chemists Society, Chicago, Illinois.

valuable properties. Their chief defects are an inherently high cost and lack of stability to acids.

The commercial success of the fatty alcohol sulfates still further increased the interest in synthetic detergents, penetrants and wetting agents of which numerous types have appeared in the past decade.

Synthetic detergents are organic chemicals whose preparation often involves a complicated series of chemical reactions and purifications.

COMPLEXITY OF THIS FIELD

Some idea of the extent and complexity of this field is afforded by the list of over 200 surface active agents, manufactured and commercially available, which appeared in the January, 1941, issue of *Industrial and Engineering Chemistry*.

Among the important surface active agents are the Nacconols, whose development was started about ten years ago.

The member of the Nacconol series having the widest utility and produced in largest volume is Nacconol NR. Chemically, this product is the sodium salt of an alkyl aryl sulfonate, R-Ar-SO_3Na. It is characterized by great chemical stability and is unaffected by prolonged heating with strong acids and alkalis. In Nacconol NR, whose aqueous solutions are neutral and have a pH of 6.8—7.2, there is found an exceptional combination of the desirable properties of a surface active agent, viz., the ability to wet-out, disperse, emulsify, penetrate and clean.

VARIED USES

A multitude of proven uses for Nacconol NR extend, with innumerable ramifications, literally from the cradle to the grave; from its contribution to the well-being of infants by the prevention of diaper rash when used with soap in the laundry to its use in embalming fluids, to which it imparts superior penetrating properties.

Nacconol NR works with hard water, not against it. When Nacconol NR is used in hard water none is wasted in overcoming hardness. This detergent dissolves quickly, and produces a copious lather. The harder the water the greater are the advantages of the detergent because its soluble lime and magnesium salts have good cleansing power in their own right.

It is a revelation both as to performance and cost to wash dishes in hard water with this compound. Two teaspoonsful; i.e., 1/5 ounce in a gallon of Buffalo city water (making a solution of approximately 0.15 per cent concentration) will thoroughly and easily wash a discouragingly tall stack of greasy dishes, and, believe it or not, it exhibits the same effectiveness in washing dishes in sea water with its incredible hardness of over 350 grains per gallon.

Woolens may be safely and thoroughly washed with it in the home laundry in cool or lukewarm water and in an incredibly short time. Washing for 3 minutes in a solution of 0.05 per cent concentration at 70 deg. F. will do the trick. The woolens come out clean, soft and fluffy—there is no felting or shrinking when washed for such a brief time in a cool neutral solution.

Many household tasks are made easier. A solution containing one-half teaspoonful per gallon is excellent for washing windows. A tablespoonful per gallon makes an ideal solution for washing woodwork, painted walls, floors and automobiles, and for greatly accelerating the removal of old wall paper if you are confronted with that unpleasant task. Linoleum floors washed with Nacconol NR solution are not slippery when wet.

In the industrial field Nacconol NR offers extensive and diversified uses in the scouring, level dyeing and finishing of textiles. Dairies and breweries use it in cleaning equipment and in the bottle washer to obtain cleaner sparkling bottles. The dairy farmer can use it to good advantage in maintaining milking machines and other equipment in a superior state of cleanliness.

It has been successfully used in street sprinklers at the rate of five pounds to 2000 gallons of water to give greatly improved street cleaning. Automobiles may be driven without danger of skidding on wet streets just washed with this surface active agent.

VALUE AS A WETTING AGENT

In the agricultural field it has proven of value as a wetting agent in insecticidal and fungicidal sprays, and in the acid washing of fruits to remove spray residues. Nacconol NR can be used also in washing fruits and vegetables prior to canning or quick freezing.

It has found several uses in the pulp and paper industry of which the following may be mentioned:

A. In connection with the washing procedure of unbleached (principally sulfite) pulp, rags and paper stock before bleaching;

B. In the continuous conditioning of paper machine felts;

C. For the softening of paper; and

D. To make paper more absorbent.

In the petroleum industry Nacconol NR can be used in the acid treatment of oil wells to recover more petroleum from oil-bearing sands.

Incorporated in small amounts into gypsum and Portland cement it increases the bulk and at the same time the strength of plaster board and of concrete.

The wetting and trapping of dust in air-conditioning systems is greatly facilitated by the use of a wetting agent, and photographic developing solutions are improved and "air-bells" on plates or films eliminated if a very small amount of it is incorporated in the formula.

Veterinarians have found that a five per cent solution used as a dog "shampoo" will kill fleas and lice, and will also remove the skunk odor from dogs which have tangled with *Mephitis mephitica*.

Nacconol NR has extensive application in effecting a very thorough removal of oil, grease and dirt from metal surfaces prior to plating, enameling or other surface coating processes. A thorough study of this problem has been conducted by National Aniline Division. Additions frequently as small as two—five per cent to various alkalis such as sodium metasilicate, T.S.P., T.S.P.P., caustic soda, etc., markedly increase the effectiveness of these alkali cleaners in metal cleaning baths with the result that lower concentrations, or temperatures, or a shorter contact time are possible. The degree of oil removal has been studied, and permanent records made, by photographs, called luminograms, which are taken in ultraviolet light.

BACTERIOSTATIC VALUE

Extensive pharmacological tests on the Nacconols, made by an outside laboratory specializing in such tests have indicated not only that they are entirely non-toxic but that they also possess distinct bacteriostatic and germicidal value.

Bacteria may be eliminated from a given surface or location by thoroughly removing them as a result of detergent action or by killing them by germicidal action. Extensive bacterial counts on dishes from dishwashing machines in which small amounts of Nacconol NR were added to the usual alkaline cleaners were much lower than on dishes washed with alkalis only.

A highly purified and commercially salt-free form of Nacconol, designated Nacconol FSNO, has been produced which is essentially tasteless in concentrations of use in gargles and mouth washes in which it functions to remove mucous. This form of Nacconol, suitable for use in food products, has been found to exhibit a partial digestive capacity for starch which it converts to an erythrodextrine.

Another type, designated Nacconol LAL, has found widespread use as a substitute for soap by those who are allergic to soaps. Since it lathers profusely at concentrations of less than 0.1 per cent it is desirable to blend it with inert organic or inorganic diluents before compressing into cakes for toilet use. It is entirely unaffected by the hardest water and will foam profusely even in cold sea water.

CLINICAL TESTS WITH NACCONOL

Extensive clinical tests by Dr. E. D. Osborne of Buffalo and his associates have shown no irritating effects from the use of Nacconol LAL by over 200 patients who were allergic to soaps. Dr. Osborne's experience was published in the *Journal American Medical Association*, Vol. 115, p. 1001-4, Sept. 21, 1940. Cakes containing Nacconol LAL in diluted form have been available to the medical profession and their clients through medical and surgical supply sources for over a year.

Articles have appeared in the medical literature within the past year on the action of synthetic detergents on the metabolism of bacteria, on the enhancement of bactericidal properties of well known antiseptics by the addition of detergents, and on the use of the newer synthetic detergents in ointments to secure better penetration.

These are only a few of the more outstanding advantages of products resulting from chemical research—another instance of the important part chemistry plays in what many would consider a commonplace procedure—washing.

The expanding production of synthetic detergents, and their use in an increasing variety of applications, is not only a promise—it is a certainty.

Lipstick Manufacturing Problems

AN IMPORTANT problem in lipstick manufacture is the prevention of rancidity during storage. It is so important that it long has been receiving the manufacturers' detailed attention, as it is not easy to find an efficient material which prevents the oxidation and at the same time is completely harmless.

In the manufacturing progress itself, according to *Schimmel Briefs*, due consideration must be given to the fact that light increases the tendency to rancidity and it is therefore necessary that colors be chosen which will not fade, change or otherwise be affected under the influence of light. The same is true of the perfume used, which must likewise be stable under light.

LIPSTICK MATERIALS

The fact that the refined oils and fats used in modern manufacture are devoid of the natural substances which retard oxidation, as contained in the crude vegetable oils and fats, makes it necessary to use chemicals, such as thymol, etc. One material which has generally been assumed to be very stable in lipsticks is castor oil, but this important ingredient unfortunately easily develops rancidity in the presence of eosin. One material which has proved very satisfactory is titanium dioxide in place of zinc oxide.

Petroleum jelly and white oil are often used in lipstick although mineral fats and oils do not carry the colors. Instead they have a slippery effect as a result of which the lipstick is not easily absorbed by the skin. To overcome this, beeswax, lanolin or castor oil are used in the place of the petroleum jelly or white oil and these adhere to the skin, therewith tending to ensure more perfect adhesion of the color used.

LIPSTICK PERFUME INGREDIENTS

Occasionally lipsticks cause irritation upon prolonged use, due to the wrong composition of the perfume compound for which reason benzilidene acetone, benzaldehyde, phenyl acetaldehyde, clove oil, hydroxy citronellal, eugenol and isoeugenol, heliotropin and methyl heptine carbonate, as well as diethyl phthalate, should be avoided. Even eosin in combination with castor oil not only develops rancidity as mentioned above, but can also have bad effects on the skin. The undesirable effect of these substances is furthermore increased under the influence of light, for which reason it has often been found preferable to incorporate in the lipstick formulation certain ingredients which will act as a sunscreen.

Chemically pure alcohols, such as geraniol, phenyethyl alcohol, citronellal, cinnamic alcohol, and ketones such as ionones, methyl ionones, and esters, such as benzyl acetate, ethyl cinnamate, etc., are harmless in general, and cinnamic aldehyde, methyl eugenol, isoeugenol benzyl ether, heptyl-, nonyl-, octyl-, and decyl-aldehyde can be used without disadvantage in small quantities. Aubépine and anethol can also safely be used, and it should be pointed out that a larger addition of oil sandalwood is definitely irritating.

The cause of irritation from lipsticks varies, sometimes being a purely personal idiosyncracy or allergy to certain ingredients, and in other cases being due to the action of an ingredient, such as the dye used. It is a subject on which authorities are by no means agreed.

Lip irritation, which in some cases amounts to a natural erythema, has been referred to by the French as *cheilite de rouge* and should not be mistaken for a physical ill, such as may be caused by cold, excessive sunlight, or certain foods or medicines. It is first noticed a few hours after application of certain lipsticks, when a burning sensation occurs, the mucous membrane swelling, often forming small blisters and even followed in severe cases by open sores. Healing takes from ten days upwards. More serious effects which may follow in its wake are always a matter of possibility especially if streptococcus infection should take place at the same time. In this case the irritation may become chronic or may eventually develop into excessive and permanent swelling of the lips—a type of elephantiasis. This type of irritation is probably caused by the dye used in the lipstick, especially so if a large quantity of coloring matter has been added. For instance, the use of tetrabrom fluoresceine and similar materials would cause such ill effects. Castor oil, when mixed with tetrabrom fluoresceine also appears to be harmful. It is therefore suggested not to use more eosin than 3.5 to four per cent of the base, which should not contain more than 50 per cent castor oil.

A SKIN SPECIALIST'S PROBLEM

The irritation and eruptions caused by lipsticks have received the special attention of skin specialists such as Schwarz, Sulzberger, and Goodwin (*Aesthetic Cosmetics* 10, 38.305), who are of the opinion that in almost all instances these irritations were due to allergies. The cases under their examination indicated that the irritation was not caused by definite chemical compounds but was due to a purely individual supersensitivity, or what might be termed idiosyncracy, as for instance observed in some individuals who are unable to eat strawberries, etc., without ill effect. These authorities are convinced that the colors used, such as eosin or tetrabrom fluoresceine, are not responsible for these occurrences. Considering the tremendous distribution and use which lipsticks enjoy, the instances in which irritations were observed are comparatively insignificant, they point out. They do not agree that the combination of castor oil with tetrabrom fluoresceine is particularly detrimental.

A Survey of Oil of Guaiac Wood

Enduring qualities of this South American oil make it a natural fixative . . . imparts a soft rose scent. Distilling process described. This product is moderately priced

by DR. ERNEST GUENTHER

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BULNESIA SARMIENTI Lor. (fam. *Zygophyllaceae*) is a tall tree, growing 40 to 60 feet high, which occurs in the vast forests and jungles of the Gran Chaco (Argentina and Paraguay), especially in the regions along the right bank of the upper Paraguay River. The fragrant hardwood of the "palo santo" or "palo balsamo" tree, as it is called locally, serves for making canes and all kinds of ornaments; furthermore, as incense. In the early 1890's, oil distilled from the aromatic wood of *Bulnesia Sarmienti* was introduced on the market. The official guaiac wood (*Guaiacum officinale* and *Guaiacum sanctum*) is never, or perhaps rarely, employed for distilling because it gives only a very small yield of oil.

Those regions of the Gran Chaco where "palo santo" grows are wild, inhabited by Indians and a few colonies of Mennonites who migrated to South America many years ago from the Volga regions and from Canada. Due to the absence of government regulations, the tree is recklessly exploited, its valuable wood being employed even for the making of charcoal. Cutting goes on throughout the year, and no thought is given to replanting. Trees 20 to 30 years old are preferred because of their size. Since the weight of the wood does not permit floating, the felled trunks are transported down the Paraguay River on lighters and, after reaching Asunción, capital of Paraguay, transferred to freighters for shipment overseas.

In years previous to the war, considerable quantities of "palo santo" wood were exported annually and distilled in essential oil factories abroad. The cost of transport was at least partly counterbalanced by the high yield of oil (five to six per cent) obtained in the modern distillation plants of Europe and North America. A few years ago, a firm in Asunción started to produce the oil locally, thus effecting a considerable saving in shipping cost. The writer visited this enterprise in 1939 and found it to operate a quite efficient, though small, distillery. Several steam boilers generated live steam for the stills, steam pressure in the boilers varying from 40 to 75 pounds, according to requirements. The trunks of "palo santo" were sawed mechanically into blocks, and then transformed into rough sawdust with the aid of hogging machines, hammers and grinders, such as employed in paper mills. From this unit the sawdust fell into a concrete basin, built into the ground and filled with water.

Two hundred fifty pounds of sawdust absorb approximately 750 pounds of water. The wetted distillation material (25 per cent wood and 75 per cent water) was then charged into the stills. At the time of the writer's visit, the distillery contained four stills: two small ones holding a charge of 100 kilos each, and two large ones holding 1000 kilos each. Distillation of one batch lasted eight hours in the small stills and 16 hours in the large ones. The distillate was not permitted to run too cool, as that would have clogged the condensers, guaiac wood oil being of butter-like consistency and easily crystallizing. The spent waters (distillation waters) were discarded, in other words, not cohobated. The yield of oil ranged from 2.7 to 3.0 per cent. In 1939 the capacity of this distillery was about 200 kilos of oil per month.

PHYSICO-CHEMICAL CONSTANTS

Oil of guaiac wood is a viscous oil which slowly congeals at room temperature to a yellowish-white crystalline mass. Once solidified, it can be reliquefied at temperatures ranging from 40 deg. to 50 deg. C.

According to Gildemeister and Hoffmann,[1] the constants of guaiac wood oil vary between the following limits:

Specific Gravity at 30°C.	0.967 to 0.974
Optical Rotation	—3° to —8°
Refractive Index at 20°C.	1.502 to 1.507
Acid Number	0 to 1.5
Ester Number	0 to 7.5
Ester Number after Acetylation	98 to 159
Content of Guaiol	42% to 72%
Solubility	Soluble in 3 to 5 volumes of 70% alcohol

Genuine oils which we imported from Paraguay during the last few years had the following constants:

Specific Gravity at 15°C.	0.979 to 0.982
Optical Rotation	—7°40' to 9°36'
Refractice Index at 20°C.	1.5044 to 1.5064
Alcohol Content (Calculated as Guiaol)	62.9% to 74.8%
Solubility at 20°C.	Soluble in 3.5 to 4 volumes and more of 70% alcohol
Color	Pale yellow

Distilling imported guaiac wood in our French (Seillans, Var) factory, we extended the period of distillation to 24 hours and obtained yields of from 4.8 per cent to 5.37 per cent of oil. We found that even higher yields (7.51 per cent) and a good quality of oil can be obtained by thoroughly mixing the powdered wood with water, adding traces of sulfuric acid, and distilling after the mixture had macerated over night. Since the acid has a deteriorating effect upon metallic stills, the process is impractical unless specially constructed wooden stills are employed.

Oils of own distillation had the following constants:

Specific Gravity at 15°C.	0.973 to 0.978
Optical Rotation	—3°30' to —8°48'
Refractive Index at 20°C.	1.5050 to 1.5059
Saponification Number	0 to 4.2
Ester Number after Acetylation	135.4 to 166.1
Total Alcohol Content (Calculated as Guaiol)	59.8% to 75.2%
Solubility at 20°C.	Soluble in 3.5 to 4 volumes and more of 70% alcohol

[1] *Die Ätherischen Öle*, 3d. Ed., Vol. II, p. 911.

CHEMICAL COMPOSITION

Relatively little is known about the chemistry of guaiac wood oil, especially in regard to its principal odoriferous constituents. Only the following compounds have so far been identified:

guaiol or *guaiac alcohol* $C_{15}H_{26}O$

The Schimmel chemists[2] isolated this sesquiterpene hydrate as one of the crystalline constituents occurring in the oil. Wallach[3] assigned to it the designation "guaiol." According to Gandurin,[4] it is a tertiary alcohol crystallizing in the form of large, transparent, odorless prisms: m.p. 91°C.; b.p. 288°C. at atmospheric pressure, 148°C. at 10 mm. pressure.

A solution of the crystals in chloroform shows laevo-rotation. Dehydrogenation yields the sesquiterpene guaiene, $C_{15}H_{16}$, together with a compound of intense blue color. The latter was identified as guaiazulene by Ruzicka and Rudolph[5]. When boiled with acetic acid anhydride, guaiol is transformed into a liquid acetyl compound, b.p. 155 deg. C. at 10 mm. pressure.

Semler and Mayer[6] found that guaiol is bicyclic and contains one double bond. According to Ruzicka and Haagen-Smit,[7] catalytic hydrogenation of guaiol yields dihydroguaiol, $C_{15}H_{28}O$, m.p. 79 deg. to 80 deg. C.

bulnesol $C_{15}H_{26}O$

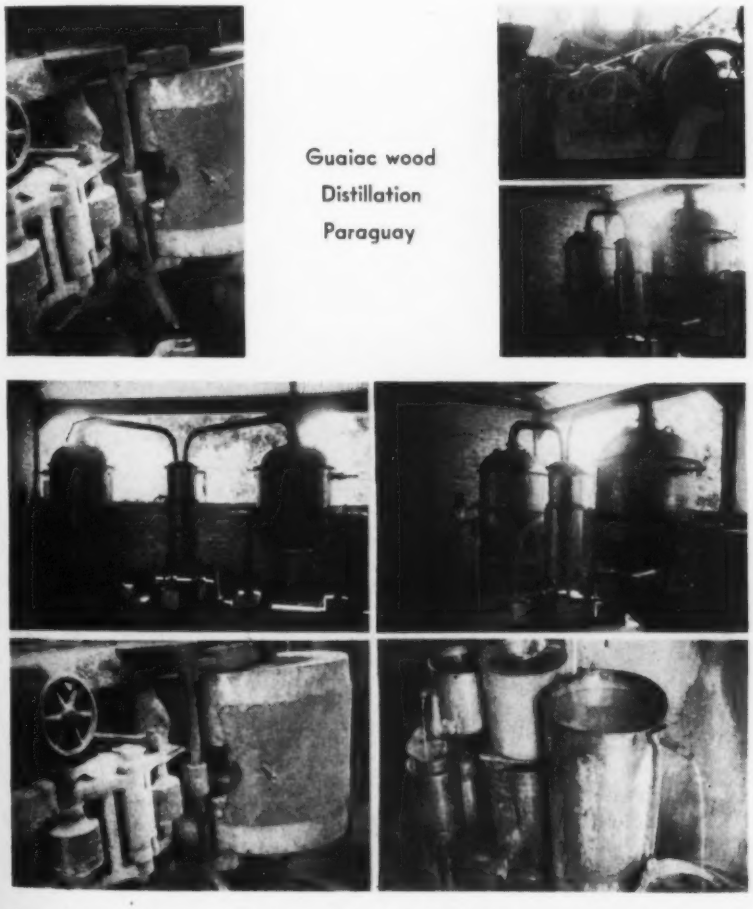
Another sesquiterpene alcohol, m.p. 69 deg to 70 deg. C., occurring in guaiac wood oil was named bulnesol by Wienhaus and Scholz.[8] It is a tertiary, bicyclic alcohol containing one double bond. Catalytic hydrogenation gave dihydrobulnesol, $C_{15}H_{28}O$. Dehydration of bulnesol with formic acid yielded a mixture of several isomere bulnesenes, $C_{15}H_{24}$, hydrocarbons with two double bonds.

[2] *Ber. Schimmel & Co.*, April 1892, 42 — April 1893, 33.
[3] *Liebigs Ann.* 279 (1894), 395.
[4] *Ber. d. Deut. Chem. Ges.* 41 (1908), 4359.
[5] *Helv. chim. acta*, 9 (1926), 118.
[6] *Ber. d. Deut. Chem. Ges.* 45 (1912), 1390.
[7] *Helv. chim. acta*, 14 (1931), 1122.
[8] *Ber. Schimmel & Co.*, Jubiläums-Ausgabe, 1929, 269.

EMPLOYMENT

Oil of guaiac wood is an interesting perfumery material, its soft, pleasant, rose-like odor recalling that of tea roses and also, to a slight degree, violets. The principal merit, however, lies in its lasting qualities; therefore, the application of guaiac wood oil as a natural fixative in rose compositions. Being moderately priced, oil of guaiac wood serves to good advantage in the scenting of soaps. It helps to conceal the harsh notes of synthetic aromatics.

In years past, oil of guaiac wood was often employed as an adulterant of Bulgarian and Turkish rose oil.



Guaiac wood
Distillation
Paraguay

Seven views showing the various steps in the distillation of guaiac wood, Paraguay

S. A. Coffee Crop

ESTIMATES of the 1943 to 1944 Venezuelan coffee crop vary between 500,000 and 600,000 bags of 60 kilograms each. (One kilogram equals 2.2045 pounds.)

Coffee stocks of the Banco Agricola y Pecuario as of December 31, 1943, amounted to 50,235 bags, of which 21,730 bags were of the washed (Levado) grade and 28,505 bags of the unwashed (Trillado) quality. This represents a decline of 13,693 bags from November 30, when the bank's stocks comprised 28,535 bags of Levado and 35,393 bags of Trillado.

The decline in the bank's coffee stocks at a time when the coffee crop is entering the market is attributed to the generally higher prices paid growers by other exporters. The bank's important position in the coffee market, despite its lower prices, is the result of its extensive and relatively liberal loans to growers.

Cuba's coffee crop of 603,568 bags of 60 kilograms each, which was harvested in the 1942 to 1943 season ended April 30, was the largest in nearly a century, and large stocks have accumulated.

Domestic consumption of coffee in Cuba in 1943 amounted to 360,000 bags and exports were about normal.

Prospects for the 1943 to 1944 crop are reported to be good and probably 540,000 bags will be harvested.

Technical Abstracts from Scientific Literature

These brief abstracts listed provide a convenient key to current scientific literature of the world on perfumes, cosmetics, toilet preparations, soaps and dentifrices

Cosmetic Preparation, *Ger. Pat. 719,542.*—Xanthogenic acids of the type *ROCSSH*, where R is a hydrocarbon residue of a high molecular hydroxy compound, are incorporated in cosmetic preparations.

Therapeutic Emulsions, *Ger. Pat. 707,580.*—The emulsions contain therapeutic substances, water, lipoids, emulsifiers and waxes. They are administered subcutaneously or intramuscularly, and their effect is of prolonged duration. Soaplike substances are used as emulsifiers. To these emulsions are also added substances which either enhance or retard the transfer of the active ingredients to the body. (*C.A.* **37**, *2888, 1943.*)

Permanent Waving of Hair, *U. S. Pat. 2,266,111. J. Am. Pharm. Assoc.*, **32**, *126, 1943.*—A device used is described, and a process for the cold permanent waving of hair on the human head which involves forcing a hair softening chemical such as sodium hydroxide or ammonium sulfide solution through a roll of the hair and removing the chemical after sufficient softening of the hair, while maintaining the roll of hair at a temperature comfortable to unprotected body tolerance, the forcing action contributing to more accurate timing and control of the process.

A Substitute for Turpentine, Ludvik Spirk, *Chem. Listy*, **35**, *307, 1941. Chem. Zentr.*, **1**, *2199, 1942.*—The commercial uses of turpentine are discussed; hydrogenated naphthalenes are suitable substitutes for industrial purposes. Thus, tetralin can be used in place of turpentine in the manufacture of shoe polishes, oil paints (80 parts varnish + 20 parts tetralin), well drying paints (permament black B extra, or zinc white + tetralin), floor lacquers (40 parts rosin + 100 parts tetralin), etc. Other hydrogenated naphthalenes can be used in place of tetralin. (*C.A.* **37**, *3201, 1943.*)

Sunburn Preventive for Use on the Skin, *U. S. Pat. 2,274,725, J. Am. Pharm. Assoc.*, **32**, *127, 1943.*—A composition permitting the passage of wave band of the sun's rays having a beneficial effect upon human skin, but preventing sunburn is formed of a non-irritating vehicle mixed with hydroquinone, suitably about one per cent of a metabisulfite of an alkali or alkaline earth metal, giving the composition a pH under seven. Such compositions are stable and retain their normal color over long periods of time.

Permanent Waving of Hair, Exothermic Composition for Use in, *U. S. Pat. 2,279,589, J. Am. Pharm. Assoc.*, **32**, *126, 1943.*—A composition for use with addition of water to it is formed of a comminuted amphoteric metal such as aluminum, a nitrate such as that of sodium or potassium, an alkaline earth metal hydrate such as calcium or barium hydroxide, a salt which will produce a biasic ion in solution such as sodium carbonate or trisodium phosphate and a filler material such as clay talc or fuller's earth.

Combating Flies, Mosquitoes, etc., *Ger. Pat. 708,509.*—As fly poison is used a mixture of monohalonaphthalene, known as respiratory poison, and formaldehyde. The preparation may be a powder, vapor or gas. (*C.A.*, **37**, *3210, 1943.*)

Esthers of Protocatechualdehyde, *U. S. Pat. 2,284,287.*—Various details are given for the preparation and use of food-flavoring compounds of the general formula

CH:CX.C(OH):CH.CH:CCHO

in which X is a phenoxy, methylphenoxy, ethylphenoxy or cyclohexyloxy radical, such as 3-phenoxy-4-hydroxybenzaldehyde and 3-cyclohexyloxy-4-hydroxybenzaldehyde. (Through *C.A.*)

Standard Procedure for Determining Abrasion by Dentifrices, M. L. Tainter and S. Epstein, *J. Am. Coll. Dentists*, **9**, *353-79, 1942.*—Apparatus method and conditions for measuring abrasive action of dentifrices are described. Calcium carbonate in 50 per cent glycerol was the standard of reference.

Varying concentrations of calcium carbonate produced minor changes. Additions of 0.15 per cent silica (240 mesh) increased abrasion 50 per cent. Dentin was abraded approximately 25 times and cementum 35 times faster than enamel. (Through *C.A.* **37**, *2887, 1943.*)

Applying Insecticides such as Those for Combating Flies or Mosquitoes, *U. S. Pat. 2,306,434.*—A process is employed for dispensing an insecticide such as naphthalene, o-dichlorobenzene or nicotine in aerosol form to increase its effective concentration which involves first forming an aerial suspension of a stable solid material, such as smoke particles from burning cornstalks with sodium nitrate in finely divided form as a carrier, and then dispersing the insecticide in aerosol form on the suspension so that it collects on particles of the carrier material.

Composition for Preventing Sunburn, *U. S. Pat. 2,267,200.* A vehicle such as petrolatum has incorporated in it a small proportion (suitable amount about 0.25 to 2 per cent) of a resin derived from petroleum and capable of absorbing light of wave lengths normally tending to produce sunburn.

Hydrogen Ion Concentration of the Skin

Second part of an article reprinted in part from The Urologic and Cutaneous Review . . . The first part appeared in the January issue of the American Perfumer

by DR. HERMAN GOODMAN

THE greater number of persons with eczema, acne vulgaris and folliculitis revealed an increase in the fat content of the healthy skin area as high as 0.61 to 1.72 mg. on four sq. cm. of the forehead skin surface. Removal of the fat on the surface is followed in a period of no more than five minutes of finding of similar amounts of fat content on the same area of skin surface. Removal with petroleum ether or benzine leads to a longer period before the fat content is found as high as prior to such removal.

Another factor in the differences of reports on acid alkali determinations through non-electrical methods has to do with the features of fat soluble dyes and water soluble dyes. If the dye indicator is solely water soluble it will have the tendency to give the color change of the water soluble ingredients. On the contrary, a fat soluble dye will give color change indicating the acid alkaline balance of the fat soluble ingredients. The palm, free of sebaceous glands and of modified glands of the apocrine series, offers water solvent dyes the opportunity of indicating the acidity of the fluid reaching the surface from the coil glands and the washings of the epidermic spaces.

Exact pH of the skin surface or of an ointment or ointment base is difficult to determine by the dye method as indicated above. We paraphrase a paragraph or two from Emerson C. Beeler (*Journal of the American Pharmaceutical Association*, Practical Pharmacy Edition, 1942—3:233). The references to the skin as an emulsion and the need for guidance in therapy are worth examining further (see Goodman: The Skin as an Emulsion; *Urologic and Cutaneous Review*, November, 1941).

Quoting from Beeler: "Exact pH value . . . has not been established as far as the skin pH is concerned . . . the addition of certain agents alter the pH of an ointment base. So far as can be determined with the aid of the potentiometer and by the application of proper pH indicators, the pH of an ointment base (reported by Beeler) is within the range of seven to nine and is decidedly on the alkaline side.

"Conclusions drawn as to the range of the pH of this ointment were based on a series of separate determinations. The base was divided into its water phase and its oil phase. It is impractical to determine the pH of the oil phase but with the aid of pH indicators it was possible to determine what effect each of its ingredients would have on the water phase." (This simulates if not duplicates the conditions of the skin surface bathed with eccrine (aqueous) and the apocrine (fatty) secretions.—H. G.) To continue from Beeler: "The water phase . . . was found to have a pH of 9.2 by potentiometric measurements and 100 gm. required about 0.8 c.c. of 20th normal sulfuric acid to reach the neutral pH seven, using potentiometric titration in combination with the pH indicator phenol red, which has a pH range of 6.8 to 8.4.

"The pH of this solution at 7.0 was unaffected by the addition of . . . propylene glycol which indicated this ingredient has no effect on pH of the water phase. A . . . quantity of the base (water phase plus oil phase) was prepared . . . and the phenol red pH indicator added to the water phase before adding the oil phase. While hot, the base was titrated with N/20 sulfuric acid and found to require about one c.c. of the acid which is not much different from the value of 0.8 c.c. required for the water phase alone. In view of these titer values it is probable that the pH of the water phase has been unchanged by the presence of the . . . (other ingredients) and that the pH of the ointment base is closely represented by the pH of the water phase which was determined potentiometrically . . . ".

As far as is now known, no similar experiment has been performed on the human skin. The water phase (eccrine sweat) is admitted as acid. Vast difficulties in determining the pH of the oil phase (apocrine secretion) are recognized. Any inconsistencies reported, particularly by color determinations of the pH of the skin surface must be expected. Conferences with physicists on the possibilities of utilizing most recently made potentiometers with platinum electrodes capable of direct reading not only on the surface but also in the depth of the skin have been discouraging.

The acidity of the skin surface increases during hot weather. It is reduced by alkaline soap washings. The presence of increased gland perspiration as in hyperidrosis or the former dysidrosis also increases acidity of the skin surface. The eccrine gland secretion is acid (pH 3.8-5.6).

ACIDITY VS. ALKALINITY

Inhibition of sweat increases the alkalinity of the skin surface. Certain pathological conditions favor increased acidity: acute inflammation with the formation of pus; lupus erythematosis discoides and certain atrophic processes, as acrodermatitis atrophicans, lupus vulgaris, and the scars of gumma. Alkaline pHs are reported for vesicular non-suppurative dermatosis; i. e., acute inflammation without the formation of true pus.

Lessened acidity but not neutrality are reported in conditions of hyperparakeratosis as psoriasis and seborrheic eczema. The less reactive conditions with seropurulent discharge also give lessened acidity but not neutrality. pH indicating alkalinity of the skin covering is associated with the ulcerative conditions of tertiary syphilis and tuberculosis. Leg ulcers with poor healing tendencies and slow granulation also give pH indicating alkalinity. Good healing ulceration, contrariwise,

gives less alkalinity than poor healing. Healthy granulation tissue is mildly acid.

It is fascinating to speculate further on the influence of the acid alkaline balance of the various areas of the skin at various ages in both male and female, on distribution of skin lesions. Mention has been made of the susceptibility of the scalp of children to the invasion of ringworm organisms. The genito-crural region and the perianal region have each been mentioned as the site of pH tending toward alkalinity.

Examination of the skin of the hand in a person with a widespread dermatosis often discloses a curious distribution explained in no other manner than by consideration of the pH of the hairy and non-hairy portions. The non-hairy eccrine gland influenced areas may be free of the eruption—as the palm and skin directly over the knuckles and on the dorsum of the terminal phalynx. The hairy apocrine gland influenced area may be involved. In severe eruptions, the eccrine gland areas are often last to be affected.

These observations may be continued for symptoms of other diseases on the skin, scalp and mucous membrane. However, it would be purely speculation since to date authoritative studies on the pH of the skin in health and in a large number of diseased conditions have not been published.

OCCUPATIONAL DERMATOSIS

The need for further knowledge of the acid alkaline balance of the skin becomes increasingly important in the determination of the actual causes of so-called occupational dermatosis. Not only is the factory worker involved but the personnel of the armed forces. Household dermatosis from exposure to soaps, disinfectants and parasiticides is well known. The influence of the acid alkaline balance for the apparent or real "immunity" or higher resistance of some persons to the same or similar application, or of some parts of the body in the same person to other portions of the skin in the same person, is now only a matter of speculation.

Occasionally mention is encountered in the literature of the need of knowledge of the acid alkaline balance of the skin to determine the validity of patch testing. The application of the material suspected of causing an unfavorable reaction of the palms is placed on the outer side of the upper arm or thigh. The palms, as has previously been mentioned, tend toward acid pH. The outer surface of the upper arm and thigh tends toward an alkaline pH. This inconsistency should be noted.

Pillsbury and Shaffer believed the determination of sensitivity by means of patch tests must be carefully done, since marked evaporation and consequent concentration of the salt occurs in 24 hours. In fact, it would seem that the interpretation of apparent allergic reactivity to varied concentrations of any substance dissolved in an aqueous or other volatile medium might be subject to question if the dissolved substance is capable of chemical irritant effects in higher concentrations. Designation of a test solution as ten per cent is correct only for a relatively short time after the patch test has been applied.

PATCH TESTING OF HAIR DYES

The official requirement for patch testing of hair dye applications under the Food, Drug and Cosmetic Act, indicates recognition of choosing an area for the patch test similar to the area to which application is to be made. An area at the back of the neck including both hairy scalp and contiguous portion of non-hairy neck is the site for paraphenylenediamine hair dye application prior to utilization as a hair dye.

Clinically, the presence of lesions close to the forehead, so-called corona venereus, and mucous membrane regions of the lips and of the mucosa of the oral cavity indicate the preference of the spirochete pallida for the more hospitable electro-chemical habitat. The predilection of the symptom of condyloma lata for the perianal and genitocrural region is well known.

The realization of the factor of acid or alkali pH in skin care for both normal and pathological cutaneous states introduces the need for the review of chemistry and application to the skin in health and disease. Physicians must enlarge on the knowledge of acid and alkaline preparations and the significance of their electro-chemical activity. The physician prescriber must review the surface—intact epidermis; thickened epidermis; denuded horny layer and exposed cutis as well as the presence of sebum production apparatus.

The therapy of lotions, powders, solutions, pomades and pastes offers relatively simple electro-chemical problems as compared with those of cream applications to the skin covering. The stable or relatively stable oil in water emulsified combinations of fat and fat-like products with water or cosmetic creams may be alkaline, near neutral or acid. The electro-chemistry of the finished cream product depends upon the ingredients, the presence or absence of buffer agents and mode of binding fat and fat-like products with water.

Physicians rarely prescribe creams. For the most part they depend upon greases or pomades. These are mixtures of fat and fat-like substances physically bound, essentially free of water. Unless the powder incorporated makes up 50 per cent or more of the bulk by weight or volume of the prescription, it remains a pomade and not a paste. The choice of the fat and fat-like vehicle for application to the skin in folklore reflects the need for "acid cloak."

The substitution of mineral oils and fats and synthetic products for animal and vegetable fat and fat-like products in official prescription writing of greases, pomades and pastes, is a departure from acid pH. This divergence is apart from the physical characteristics of ointment bases incorporating animal and vegetable oils and fats as compared to those incorporating mineral oils and fats. The emulsification factor of animal and vegetable fats and fat-like products is lost when employing mineral fats and fat-like products.

ACID APPLICATIONS FOR SKIN CARE

In recent years, a reversion to acid applications to the skin has been broached, particularly by the manufacturers of cosmetics for skin and scalp hygiene. Soap and saponification as a chemical physical binder for fat and fat-like products bound with water, are no longer advised universally. Physical binders, synthetic binders and the incorporation of unmodified acid ingredients have been offered. Most of the products required in the formulation of these non-alkaline neutral or acid preparations are on priority or required for essential war chemistry. Their production is described elsewhere in another paper.

Grandmother admonished her daughter to abstain from soap and water ablution without any knowledge of pH or "acid cloaks" of the normal skin surface. Women have for years revelled in acid lemon creams and vinegar rinses for skin and scalp hygiene. The soap of grandmother's day was a strongly alkaline soap in contrast with the controlled modern factory manufactured product.

It is significant that modern soaps, designed for toilet and cosmetic use, are prepared to minimize the release of hydroxyl ions when moistened. In therapeutics, particularly in the application of sulfur, this recent modification leads to poor results. Sulfur applied to the skin can be effective through production of alkaline polyhydrals, particularly the SH group. Neutral sulfur is completely inert. Acid sulfur on the skin surface is active only through the evanescent sulfurous

acid leading to the production of the gaseous SO_2.

The efficacy of the local application of the sulfonamide group of drugs to the skin may also depend upon the acid alkaline balance of the site of application. The alkaline salts of the sulfonamide groups are more soluble than the drug itself. On areas of skin with acid predominating, the drug may be inactive: in presence of alkaline discharges, highly soluble and easily absorbed.

SUMMARY OF RESEARCH

On the basis of a number of published papers purporting to give the pH of the skin and its coverings and certain general observations regarding clinical dermatology and topical therapeutics, the writer has offered certain philosophical thoughts. These have covered the difficulties of actually determining the acid alkaline balance either of the skin surface or the skin layers. The skin as an emulsion—a temporary or permanent union of otherwise immiscible water and fat-like substances—is compared more or less properly with a cosmetic cream.

The localization of certain diseases of the skin is reviewed in the light of acid alkaline balance. The acidity of eccrine gland secretion is accepted. The possibility of accepting the apocrine gland secretion as an alkaline or near neutral soap is advanced.

The complexity of influences on the skin surface determining its predominating acid-alkaline balance is suggested by naming the eccrine gland discharges, the apocrine gland secretions, the products of cell metabolism emptied into the epidermic cell spaces, and the presence of environmental products. These are bound together on the skin surface. The summation of their hydroxyl and hydrogn ions determine the pH.

The future of topical applications in therapy of dermatology is influenced by study of the pH of the integument in health and disease. There is a tendency in cosmetology, considering cosmetics as preventive dermatology, to substitute near neutral or mild acid reactions for alkaline creams.

Patch testing, experiments on efficacy of one or another medicament for bacterial diseases and basic causes of dermatoses usually listed as occupational likewise require review in the light of acid-alkaline balance of skin surface and epidermis depths.

Reference to folklore and household practice reveals "vinegar rinses," "lemon creams," and others reflecting preference for acid applications to the skin and scalp, and experience as teacher for "acid cloak."

Amendments to British Essential Oils Control

by OUR BRITISH CORRESPONDENT

FURTHER AMENDMENTS of British Essential Oils Importation and Distribution Scheme (AMERICAN PERFUMER, July and September, 1943) have been announced. Contrary to one of the provisions in the original Scheme, a user may nominate his suppliers, if he has more than one, for any particular oil, regardless of the minimum quantities of 500 lbs. and 250 lbs. stated in the Clause. Such nominations should be made in proportion to the quantity purchased from each nominated supplier during the Datum Period.

Another clause in the original required that Datum Period Distributors (D.P.Ds.) will take delivery of oils from Approved Representatives (A.Rs.) of primary shippers in original packages.

Experience has, however, shown that this is not always possible, for cases have occurred where D.P.Ds. have been nominated for quantities which even in the aggregate amount to less than an original package.

Cases will, therefore, occur when the contents of an original package must be shared by several D.P.Ds. who, in their turn, may each have to supply several users.

To avoid double repacking, the following procedure which requires the cooperation of the D.P.Ds. concerned has been authorized by the Advisory Committee to be followed in such cases.

The independent chartered accountants under the Scheme will select one of the D.P.Ds. concerned in the sharing of a package to take up the whole package from the A.R. in the ordinary way, thus acting on behalf of all those who are to share the package. The D.P.D. who undertakes this will arrange for the packages to be sent to a public wharf or other place agreed upon by the D.P.Ds. concerned where repacking can be effected, and will issue to the other D.P.Ds. whose names he will be given by the chartered accountants for their respective share of the package. Each of the D.P.Ds. will then issue to the wharf their own instructions regarding repacking and will pay the cost therof. The D.P.D. who took up the complete package will invoice to each D.P.D. his share of the package at the authorized A.R./D.P.D. price and will arrange to divide *pro rata* among them the various cost he has incurred, viz., any transport, insurance or wharf charges incurred in moving the drum to a suitable place for repacking. Any loss in weight in repacking will also be shared. Each D.P.D. will pay the cost of repacking his share direct to the wharf which carries it out.

As regards the splitting of the original package, D.P.Ds. have two choices open to them:

1. They may instruct the wharf to repack their respective shares directly into the final packages in which the oil is to be delivered to users—or
2. They may have their respective share packed into one container from which they will repack in their own ware-house into the final package for delivery to users.

In either event, the price to the eventual user must not exceed the authorized price, plus the cost of packing authorized for final type of package used.

Users have no right to demand a sample of a parcel of oil tendered to them by D.P.Ds. before accepting the D.P.Ds. contract. The user must accept such tender although this does not affect his right to claim on the score of quality if he can eventually prove that the parcel tendered does not comply with this description. If circumstances permit, however, D.P.Ds. have discretion to submit samples, but this does not relieve D.P.Ds. of their responsibility for satisfying themselves that the Oil conforms to the description laid down in the A.Rs. selling contract. If a user rejects an allocation on any grounds other than the failure of goods to comply with the contract description, he will forego that allocation altogether.

The making of delivery contracts—that is, for delivery spread over a period—was not provided for in this Scheme. Only in cases of real hardship and where the amounts involved are considerable, the supplier may agree, if he so desires, to hold part of the user's allocation for him and the charge for such facility would be a matter for mutual agreement. Where breaking bulk would be entailed, however, the user must take up allocation at once.

DIRECT C.I.F. PURCHASE

The clause quoted in AMERICAN PERFUMER, October 1943, p. 52, has been superseded by the following:

"Users who imported any oils and/or purchased them on C.I.F. terms directly from the Importer during the Datum Period may nominate themselves as D.P.Ds. for such quantities of those oils as are allotted to them by Supervisory Bodies to the extent only of the proportions which their purchases made on *both such terms* during the Datum Period bear to their total purchases made on *all* terms during the Datum Period. Each variety of oil must be dealt with separately."

Here and There Among Our Friends

▸ Walter Conklin, the popular president of the Foragers of America, was tendered a surprise luncheon by a group of his friends in the industry February 10 in honor of his birthday. The luncheon was held at The Scribes restaurant, to which place he was inviegled by Bud Keeley, Edward Russell and Kyle Sheffield. On arrival he found many others in the trade who had assembled to celebrate the occasion. At the conclusion of the luncheon a set of eight crystal glasses and a tray was presented to him by "his friends in the industry." The appellation was well chosen, for the well known representative of Evans Chemetics, Inc., has won a host of friends throughout the industry in the many years he has been working in it. The affair was arranged by Bud Keeley, Dr. Ralph Evans, Edward Russell, Kyle Sheffield and A. R. Ausholm.

Walter A. Conklin

▸ Mr. and Mrs. Charles O. Homan, 11 Glenwood Road, Rockville Center, N. Y., have announced the marriage of their daughter, Margaret, to Ensign Warren G. Kreter, U.S.N.R., son of Mr. and Mrs. Charles F. Kreter, 150 Princeton Road, Rockville Center. Mr. Homan is salesmanager for Dodge & Olcott, 180 Varick St., New York, N. Y.

The wedding, performed by Father John Fischer, took place in the Rectory of St. Anthony's Church, Oceanside, Long Island, on Sunday, February 27th, at 4 P.M. The matron of honor was Mrs. Daniel Haff; bridesmaids, Dorothy Coffin, Joy Corwith; best man, Richard Kreter, U.S.M.C.; ushers, Gary Piccione, M.C.U.S.A., Richard Cuniff, U.S.N. The ceremony was followed by a reception for 100 people at the Garden City Hotel. Mr. Kreter is a graduate of Dartmouth College, and is an Ensign in the United States Naval Reserve, assigned to active sea duty. Mrs. Kreter is a graduate of LaSalle Jr. College and the Katherine Gibbs School.

▸ Randolph H. Barnard, executive vice-president of Owens-Illinois Glass Company, has been honored by the American Legion through his appointment to an important subcommittee of the Legion's Commission on Post-War America.

Mr. Barnard has been selected to serve on the Labor, Management, Private Enterprise and Public Activities Committee of which Gov. Prentice Cooper of Tennesse is chairman. Gov. Leverett Saltonstall of Massachusetts is a member of the same committee.

Mr. Barnard said the Legion is endeavoring through this and other subcommittees to develop with the Army, Navy, Maritime Commission and the State Department a program on Post-War America. "It is hoped that by means of this program definite legislation, if necessary, can be developed to guide this country through the Post-War period," said Mr. Barnard.

▸ Mr. T. H. Garlick, Sales Manager of Seeley & Co., Inc., is spending his annual winter vacation at the Lake Placid Club, Placid, N. Y. Mr. Garlick expects to return to his office, 136 Liberty St., New York, N. Y., the middle of March.

▸ Peyton Hawes has been appointed a first vice-president of the National Wholesale Druggists' Association to succeed the late Harlan E. Brown, it has been announced at the association's New York headquarters. Mr. Hawes is vice-president and manager of the Portland, Oregon, Division of McKesson & Robbins, Inc., to which position he was named following the death of Mr. Brown Nov. 5 last.

▸ Stanley B. Schuster, who in his 22 years of service with Fritzsche Brothers, Inc., has made many friends in the industry, has been appointed Office Manager of his company's Chicago Branch.

The Chicago Branch of Fritzsche Brothers, Inc., is under the management of Joseph A. Gauer, president of the Chicago Perfumery, Soap & Extract Association.

▸ Jacqueline Montgomery, daughter of Mr. and Mrs. John H. Montgomery of Montclair, N. J., was married February 2nd to Ensign Douglas Halling West, U.S.N.R., son of Mrs. Stoker West of Montclair and Greensboro, N. C., and Charles H. West of Washington, D. C. The wedding took place at the home of the bride, and in the presence of the immediate families. Mr. Montgomery, secretary of Fritzsche Brothers, Inc., 76 Ninth Ave., New York, N. Y., and president of U. S. Essential Oils Ass'n, gave his daughter in marriage.

The bride was a graduate of Montclair High School and is now a student at Centenary Junior College, Hackettstown, N. J. Ensign West attended Darrow School at Lebanon, N. Y., and is a graduate of the University of North Carolina. After graduation he enlisted in the U. S. Naval Air Force and received his commission and pilot's wings at Corpus Christi, Tex., last May. He is now pilot of a carrier-based torpedo bomber and leaves shortly for active duty in the combat zone.

▸ Lieut. Richard H. Frascati, son of Anthony T. Frascati, chief chemist and perfumer, Firmenich & Co., 135 Fifth Ave., New York, N. Y., serving as instructor in marksmanship in small arms, has been loaned by the Infantry Division of the Army to the Chemical Warfare Service. He was recently transferred to the Chemical Warfare Unit at the University of Akron, Ohio, which is engaged in research work and supervision of operations, at the butadiene plant in Akron.

Lieut. Frascati was graduated from Cornell University with the degree of B.S. in chemistry in 1941. Although he planned to pursue his studies in chemistry in post graduate work originally, he joined the Army, with which he has been connected ever since. The many friends of his father will be delighted to learn of the conspicuous progress made by Lieut. Frascati and the signal honor which has been paid him by giving him the opportunity to undertake important work in the production of synthetic rubber.

▸ Frederic I. Rowe, export manager of Shulton, Inc., left February 17 for a three months' trip to South America. Traveling by plane, Mr. Rowe will visit Peru, Chile, Argentina and Brazil to make market surveys and appoint representatives to handle the distribution of Shulton merchandise. Mr. Rowe is expected to return to New York the middle of May.

▸ Fred C. Theile, president of P. R. Dreyer, Inc., essential oil and chemical firm, located at 119 West 19th Street, New York, N. Y., is still convalescing from an illness which has kept him away from his desk for the past seven months. We know that Mr. Theile's many friends wish him continued progress on the road back to health.

▸ Dr. George O. Curme, Jr., vice-president and director of research of Carbide and Carbon Chemicals Corp., has been awarded the Willard Gibbs Medal of the Chicago section of the American Chemical Society. The award, one of the highest distinctions in American chemistry, will be formally presented to Dr. Curme at a meeting in Chicago on May 24.

PACKAGING PORTFOLIO

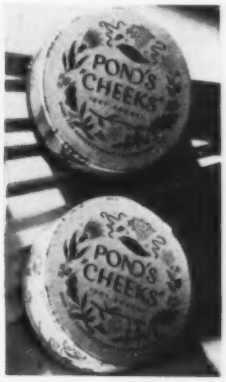
ESME OF PARIS: On Fifth Avenue, its sophisticated sparkle will pick you up when heat or war duties lay you low. A perfume with a disturbing, unforgettable scent

YARDLEY: Dry Skin Cleansing Cream and Toning Lotion complement each other in their use. The soothing effect of the cleansing is refreshened with the lotion

SPERTI: SRF Night Cream and SRF Day Lotion are the products of much experimentation by Drs. Sperti and Cook, containing the Biodyne R, found to be the skin respiratory vitamin

LUCIEN LELONG: Face and Shoulder powder in an exquisite glass jar printed with fragile white scrolls, through which the delicate pink powder shows

VITA RAY: Vidafilm, liquid cake make-up in five shades. Bottle has blue label and closure



POND'S: Cheeks, dry rouge, in a case of paperboard in the Dreamflower pattern, like powder box

DOROTHY GRAY: Cellogen Cream, an exceptionally rich emollient containing Biactol, a glandular hormone. To be used at night. Results in six weeks

HEDDA MAAR: Anytime Cream, snow white product, delicately scented, a cleanser and lubricator for the skin. To complement the cream is "Exquisit Freshener"

LYNETTE: Spellbound perfume bottle rests on a sheath of white satin encased in a white suede box. The bottle itself has an unusual octagon-shaped stopper, thin neck and round sides. Toilet water is packaged in similar effects

TOODOO: The new shampoo finale, to be used as the last rinse to remove all soap film and leaves a fine glossy luster

ANTOINE CHIRIS

Antoine Chiris was established in France in 1768 and all through these years pioneered in the development of its long-known worldwide organizations. The American branch was established in New York in 1899.

CHIRIS

is prominent in

PERFUME BASES

AROMATIC MATERIALS

for

PERFUMES • COSMETICS • SOAPS

Long and persistent experience in research enables Antoine Chiris to solve your problems of replacement, substitution or adjustment.

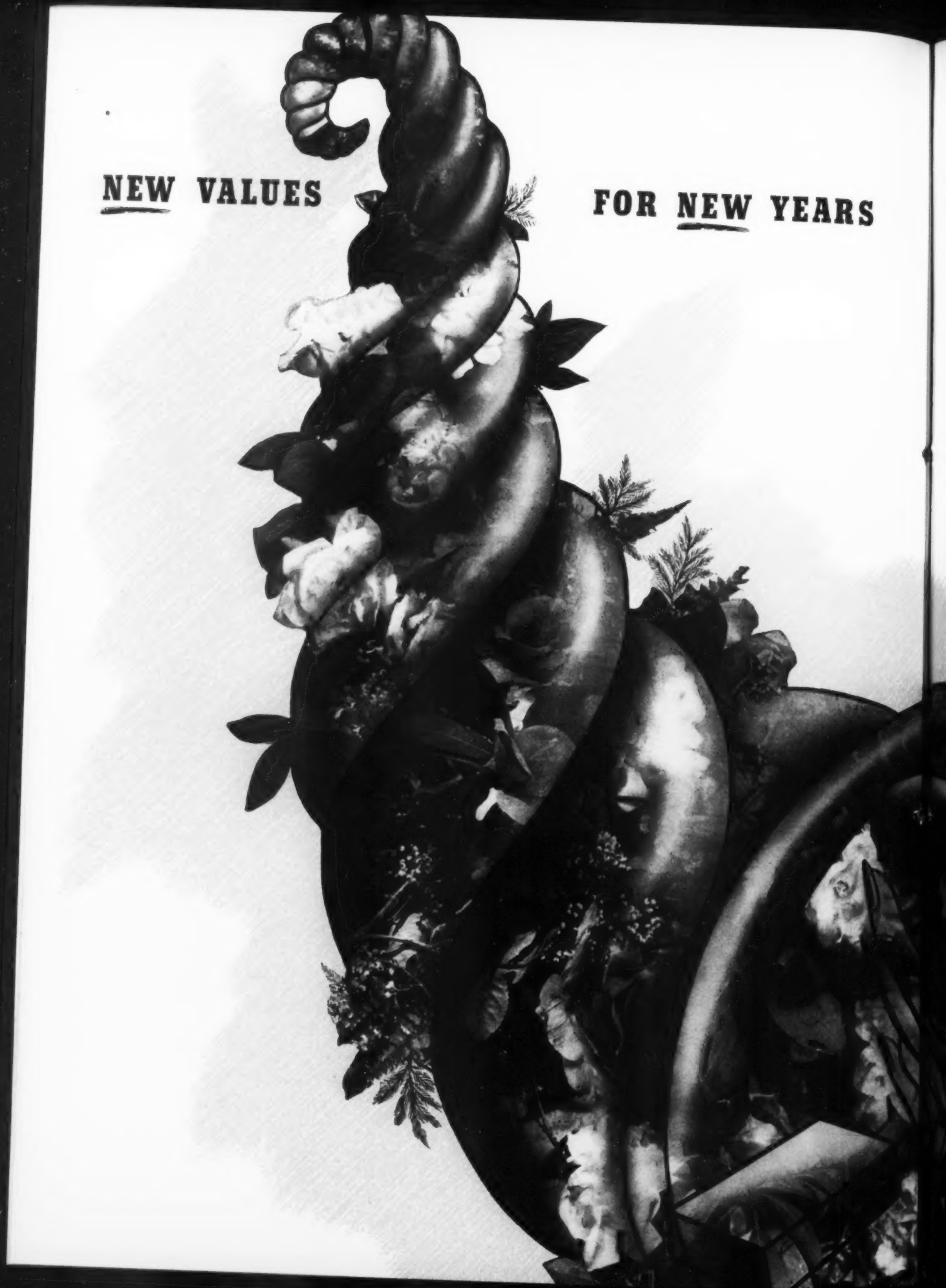
ANTOINE CHIRIS COMPANY, INC.

115-117 EAST 23rd STREET, NEW YORK, N. Y.

SOLE DISTRIBUTORS IN NORTH AMERICA FOR

PIERRE DHUMEZ ET CIE — ETS ANTOINE CHIRIS, GRASSE, FRANCE — PILAR FRERES

ANTOINE CHIRIS, LTD., LONDON, ENGLAND


NEW VALUES
FOR NEW YEARS

OF PLENTY...WITH A PLUS BY

Givaudan

The past few years have been among the most difficult years which producers and users of perfume materials ever had to face. Yet in many ways these years have been the most fruitful, giving the industry new confidence in its resource and ingenuity.

Of the new developments helping to fill the places of materials made critical by war, many are making good to the highest quality standards... achieving results efficiently and economically in the compounding of a wide variety of toiletries and cosmetic goods. Certain among these war-born "replacement" materials, therefore, can be expected to take their place in the peace years to come side-by-side with old reliables when these are available again.

Because Givaudan research has contributed importantly to these "new values" in aromatic chemicals, we are prepared to offer authoritative counsel on both the advantages and limitations of their use in post-war product development plans.

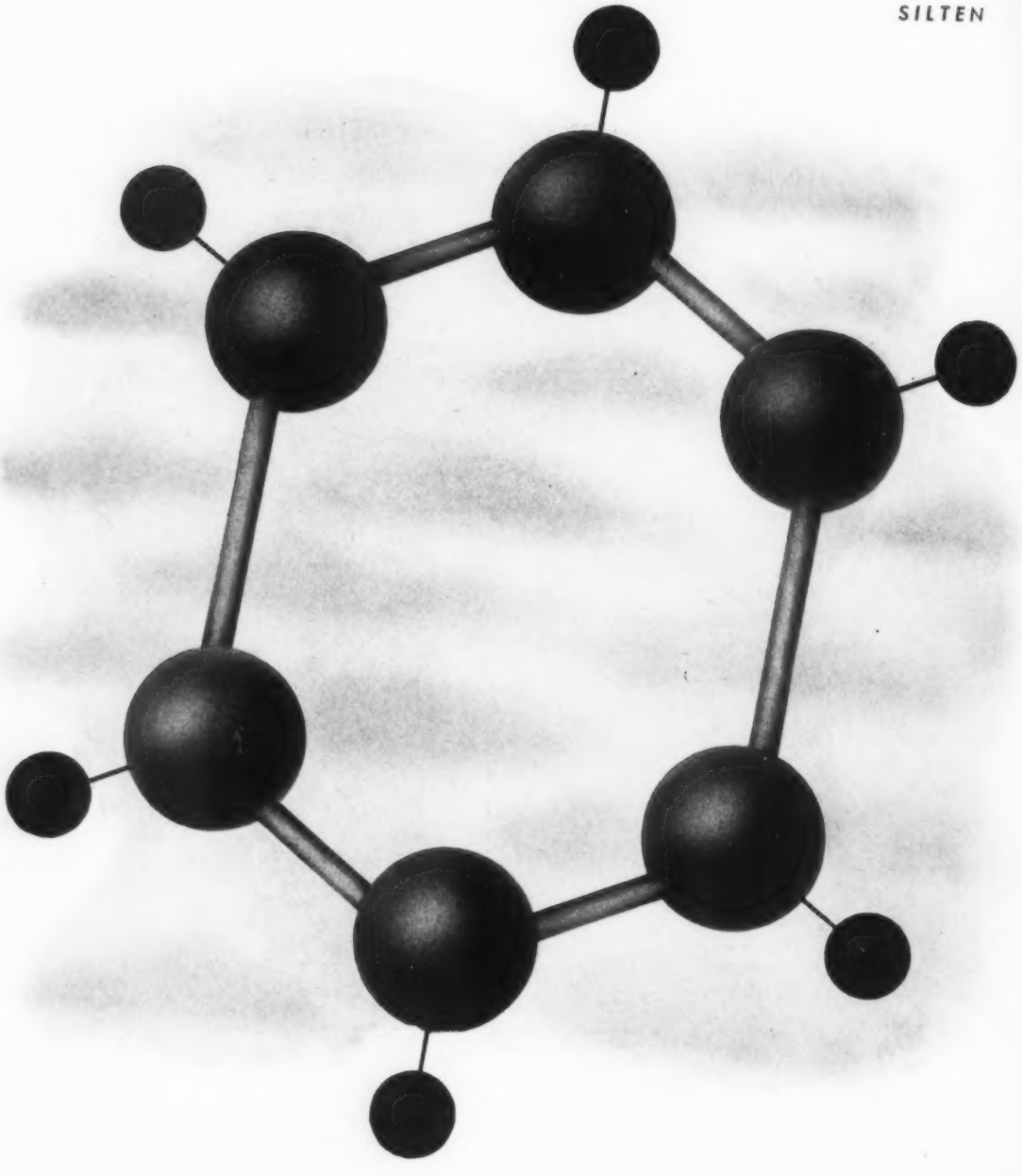
BUY WISELY—BUY GIVAUDAN

Givaudan-Delawanna, Inc.

330 WEST 42nd STREET, NEW YORK 18, N. Y.

OUR PLANT FACILITIES ARE AVAILABLE FOR ANY FURTHER CONTRIBUTION WE MAY MAKE TO PRODUCTION OF MATERIALS FOR THE WAR EFFORT.

SILTEN



Iso Bergamone

the *scientifically* developed synthetic Bergamot oil

POLAK & SCHWARZ INC. 667 WASHINGTON ST., NEW YORK, N. Y.

Trade Jottings for Month of Feb.

HARRIET HUBBARD AYER has just issued her new retail price list of beauty preparations. Buyers are urged to order from this list only, destroying all those with dating previous to March 1.

CHEMICAL CENTER CORP. and Lynette Perfumes, Inc., have announced their removal to 826 Broadway, New York 3, N. Y. Their telephone number has been changed to Gramercy 3-3600.

MIRIAM GIBSON, publicity director of Shulton, Inc., left March 10 for a three-week's vacation.

PRINCESS HELENA RUBENSTEIN GOURIELLI has just returned from Buenos Aires, Argentina, where she has established a salon. Madame Rubenstein thinks that there are great possibilities for the development of the cosmetic industry in South America. For some time she has had a factory in San Paulo, Uruguay, which has taken care of the great demand for her products in South America.

ANN HAVILAND has moved into new offices and showrooms. The concern is now situated at Number One West Fifty-second Street, New York, N. Y.

LYNETTE PERFUMES announces the appointment of Mr. D. Silver to the position of general manager. He has replaced Mr. J. B. Calia, who is now a member of the U. S. Armed Forces.

MICHAEL OF THE WALDORF, well-known hair stylist and beauty expert at the Waldorf-Astoria, announces the appointment of Sara Fox to direct publicity and promotion for his business.

MISS CLARA OGILVIE, head of Ogilvie Sisters, is in Toronto, Canada, for an indefinite stay. Ogilvie Sisters are hair specialists and manufacturers of hair preparations.

THE OWENS-ILLINOIS GLASS CO. is helping to solve war-time problems through its radio program, "Broadway Matinee," which brings to American listeners war messages from the Government. An outstanding array of government officials and home-front leaders has appeared on this program, which is broadcast over the complete Columbia chain. War bonds, Red Cross, rationing, recruiting, ceiling prices, conservation and other war-time necessities have been covered in messages and pleas. Owens-Illinois has also been able to increase public understanding of war problems of the manufacturers and distributors of packaged products, thus reducing public dissatisfaction.

POND'S EXTRACT COMPANY and Pond's Extract Company International, Ltd., in line with a policy of post-war planning looking to stronger inter-American relations, have created a new post —Director of Foreign Sales—American division. This will be filled for both companies by Peter P. Isaza, formerly with the Pepsodent Company.

Peter P. Isaza

The new position will include direction of advertising, promotional and sales efforts for Pond's products throughout the Western Hemisphere, with the exception of the continental United States and Canada. In addition, Mr. Isaza will direct the manufacture of Pond's products in those territories where ssubsidiary plants are located.

After the war, when conditions permit the unobstructed flow of supplies, Mr. Isaza will direct the promotion and broaden the marketing of new Pond's products in the areas covered by his directorship.

A native of Colombia, Mr. Isaza has spent many years in this country and is now a United States citizen. With seven years in export work with E. R. Squibb and Company previous to his association with Pepsodent, Mr. Isaza has had broad experience in the marketing of cosmetics and allied products.

REVLON PRODUCTS CORP. announces the appointment of Miss La Verne Johnson as director of sales promotion-personnel. All Revlon consultants, "Ladies in Red," and department store demonstrators are under her supervision. Miss Jeanne Young, formerly in charge of demonstrators, has been promoted assistant to Miss Johnson.

The company has also announced the appointment of Lester Herzog as assistant sales manager in Beauty Salon Division. He is rejoining the corporation after having spent 15 months in the Armed Services, from which he was honorably discharged.

The Revlon concern is now supplying the women Marines with a nail enamel which had formerly been discontinued. Mr. Charles Revson received a special request from an officer in the Correct Grooming Department for a supply of "Bravo" nail polish. It turned out that this particular shade matches exactly the red chevrons on the Marine uniforms and cords on the hat.

SHULTON, INC. announces the appointment of the Gotham Agency to handle advertising for the Spanish-speaking territories. Arthur A. Kron is account executive. The company is now making plans for the distribution of its merchandise in Mexico, Cuba and many of the South American markets.

The company also announces that Frank N. Carpenter, Jr., left the New York General Sales Department to be inducted into the Army on February 11, 1944. Mr. Carpenter is well known to department stores' toiletries buyers in New York and throughout the country.

Shulton is running a full color advertising campaign on the Early American Old Spice men's line in large-circulation national magazines this spring, for mid-season and Father's Day selling. Silhouetted ship, motif of the line, is used for illustrative background for merchandise photos.

CAMPANA SALES CO., sponsors of "First Nighter," announces the change of this program, effective March 8, from Sunday to Wednesday night at the new time of 9:30 to 10:00 p. m., EWT. At this time, "First Nighter" will expand from its present number of 124 stations to the full Mutual network. The change is in line with Campagna's present plans to continue the show throughout the summer months.

CORINTHA, INC., started participating in the "Arthur Godfrey" program over the Columbia Broadcasting System on March 6.

NOXZEMA CHEMICAL CO. announces it will sponsor "Mayor of the Town," starring Lionel Barrymore, when the program returns to the Columbia network March 11. The dramatic series will be heard over 56 Columbia outlets on behalf of various Noxzema products.

PROCTER & GAMBLE has announced the addition of 11 new stations to the 72-station NBC network which carries their serial drama "Brave Tomorrow."

VICK CHEMICAL CO. announces the extension of its advertising schedule on WABC from a seasonal to a year-round basis.

A PRODUCT OF EXCEPTIONAL PURITY

DOW PROPYLENE GLYCOL, N.F.

now available for quantity delivery

Abundant supplies of Dow Propylene Glycol, N.F., are now available for prompt delivery. This new, high-quality product is ready to serve you in a variety of ways. Propylene Glycol is a clear, colorless, viscous liquid, which is completely miscible with water, chloroform and acetone. It is also compatible with a wide variety of organic materials, where its superior solvent and preservative properties are advantageous. We believe you will find this exceptionally pure material a valuable addition to your product.

FOR THE COSMETIC INDUSTRY

Dow Propylene Glycol is used in the manufacture of cosmetics as a carrier, solvent, emollient, humectant and preservative. It is of special value as a softening and soothing agent, penetrant, and mutual solvent for water creams, lotions, jellies, lip rouge, liquid face powders and nail polishes.

Write for New Booklet

A new booklet explaining the use of Dow Propylene Glycol, N. F., is just off the press. It contains necessary physical data, charts and other technical information to aid you in using this helpful product. We will be pleased to send you a copy on request.

THE DOW CHEMICAL COMPANY, MIDLAND, MICHIGAN

New York • Boston • Philadelphia • Washington • Cleveland • Chicago • St. Louis
Houston • San Francisco • Los Angeles • Seattle

DOW

CHEMICALS INDISPENSABLE
TO INDUSTRY AND VICTORY

Flavors on the Home Front

As the various raw materials necessary to the production of flavors grew inaccessible or were limited by Government order new products were developed to replace those no longer available

by EILEEN C. NEUMANN

Home Economist, Virginia Dare Extract Company, Inc., Brooklyn, N. Y.

WHAT A WEALTH of romance, adventure, research and hard work enters into the manufacture of flavoring extracts. Consider the extent of the market for raw materials—cocoa from Africa and South America, vanilla beans from Madagascar and Mexico, lime juice from the West Indies, ginger from China and West Indies, cardamon seed from Malay Archipelago, cinnamon from Ceylon, clove from Madagascar and Zanzibar, mace and nutmeg from Grenada and the West Indies, to mention a few in addition to the raw materials to be obtained from North, South and Central America.

Today we are largely dependent upon the supplies which are close at hand and upon those which are occasionally brought from far off places when the shipping space is available (a task which is no less dangerous than that undertaken by the blockade runners of Civil War fame.)

VANILLA EXTRACT

Vanilla extract is probably the one most used by the housewife. The United States uses about 1,000,000 pounds of vanilla beans per year in the manufacture of this popular flavor. Of that amount approximately two-thirds is obtained from Madagascar and the surrounding islands; the remaining one-third from Mexico. After the capitulation of Madagascar, limited exportation of these beans was allowed and these coupled with the goods seized from enemy vessels kept importation at a workable level last year.

ORANGE AND LEMON POPULAR

The next most popular fruit extracts are probably lemon and orange. Italy formerly supplied the world with both of these flavoring oils. However, since 1938 we have been receiving increasing supplies of lemon and orange oils from California, Florida, and more lately from Brazil. Because of the rapid and successful development of this industry in California, Florida and Brazil, it is no longer necessary for us to rely on a single source of supply for these well-liked flavoring oils.

"Sugar and spice and everything nice" is part of an old favorite nursery rhyme, but many a housewife did not realize how frequently those spices were used until the supply became limited. The loss of countries which had formerly exported spices—cinnamon, clove and nutmeg—cut off these supplies, which the American housewife had come to look upon as essential flavoring condiments. Existing stocks of the essential oils of the more common spice stimulated the use of extracts that are compounded mainly from the desired spice oil in a solution of alcohol and water. These extracts are easy to use, impart a true flavor and have the added advantage of flavoring without coloring. Within the last few months there has been an increased interest in the perfection of imitation dry spices as well as the perfection of imitation liquid extracts.

Existing supplies of essential oils would not have lasted as long as they did if the chemists had not rearranged formulas so that the scarce oils were used more sparingly. To compensate for the loss of strength, the wider use of domestic products and flavor duplications from aromatic chemicals was stimulated.

LABELING REQUIREMENTS

Chemists have long been working on imitation flavors. Great numbers of these are made from the flavoring ingredients of the pure flavor but manufactured from some more plentiful source. Because these products are manufactured from some source other than the natural one, even though chemically there is no difference in the composition of the product, the extract

Flavor
Freshness
Uniformity

Constant attention to these important qualities has made EXCHANGE OIL OF LEMON first choice of American users.

The excellence that has always been associated with EXCHANGE OIL OF LEMON is checked by our expert chemists before every shipment.

Made by the largest producer in the Lemon Oil business today—always alert to the needs of the trade—the EXCHANGE group continues to supply its customers with the world's finest Lemon Oil.

Exchange

OIL OF

LEMON

U. S. P.

Sold to the American Market exclusively by

DODGE & OLCOTT COMPANY
180 Varick Street, New York, N. Y.

FRITZSCHE BROTHERS, INC.
76 Ninth Avenue, New York, N. Y.

Distributors for: CALIFORNIA FRUIT GROWERS EXCHANGE
PRODUCTS DEPARTMENT, ONTARIO, CALIF.

Producing Plant: Exchange Lemon Products Co., Corona, California

must be labeled as an imitation extract.

Vanillin, now manufactured from oil of cloves, dye intermediates and wood pulp, is the flavoring constituent of the vanilla bean to the extent of three per cent by weight; cinnamic aldehyde, flavoring ingredient of oil of cassia, is manufactured from benzaldehyde; and benzaldehyde, the flavoring ingredient of oil of almond, is manufactured from a coal tar derivative. These are examples of this type of imitation flavor.

In addition to these so-called imitations, the flavor chemist has at his disposal those aromatic substances classified as esters, aldehydes and alcohols. Esters are the product of the combination of an organic acid and an alcohol and are used for their characteristic flavors and odors. The aldehydes are compounds midway between an acid and an alcohol and are distinguished by their characteristic flavors and odors. Many are used in place of the essential oils in perfumes and a greater number are used in the flavor industry. Peach, strawberry, cocoanut and pineapple are some of the more popular aldehydes used for flavoring ingredients. These compounds, skillfully blended with the aromatic alcohols, and ethers produce very accurate flavors.

COMPOUNDING FLAVORS

The skill of the chemist in blending the raw materials plays a large part in the quality of the finished extract. Many of the flavoring compounds are very strong and have both an unpleasant flavor and odor when used in too high concentration. When used in small quantities, however, they help make a well-rounded flavor.

The advantages of using an imitation are fourfold:

First, they are economical to use since they are usually stronger than the true fruit extract;

Secondly, they are easy to handle;

Thirdly, they impart a true flavor and are not as the name might suggest, inferior in quality;

Fourthly, they are more stable in many instances and are less sensitive to changes than are those made from the essential oils.

After the flavor has been compounded it must be preserved so that the consumer receives an accurate duplication of the flavor that the chemist obtained in the laboratory even though several months may have elapsed before it is ultimately used. To this end the chemist utilizes sodium benzoate, benzoic acid, propylene glycol, alcohol and the preservative effect of some acids. The aldehydes mentioned above will oxidize, in the presence of oxygen of the air, to the corresponding acid producing a characterless flavor. A substance called an anti-oxidant which will prevent this oxidation can be employed to preserve the freshness of the flavor.

OTHER SHORTAGES

Shortages not only of the essential oils and other flavoring ingredients, but also of the common materials that are necessary to a well-balanced quality extract also faced the manufacturer. Sugar rationing was the first indication that these materials would not be as plentiful as they had been in the past. There followed in quick succession alcohol, glycerine, citric acid and shortages of all corn products which included corn sugar, sirup and starch.

ALCOHOL SUBSTITUTE SEARCH

With the allocation of alcohol to the manufacturer and the additional tax levy, research laboratories began to hum with activity. The problem was to find a solvent that could be used with the more common flavoring compounds, would impart no flavor of its own, would not be injurious, would combine with water and would be inexpensive. Probably that which has proven most successful in this field is propylene glycol. This organic solvent can be used not only as a solvent but as an emulsifying agent, as an extracting agent, and in the proper proportions exhibits preservative properties. Since it can also be used as an emulsifying agent, it is used as an alternate for glycerine in some flavoring emulsions.

CITRIC ACID SUBSTITUTES

The shortage of citric acid threatened to be serious as most of the fruit flavors are improved by the addition of some fruit acid. Citric acid which is found abundantly in many fruits was a logical acid to use for fruit flavors. In replacing this acid the problem was to find an acid which was readily available, inexpensive, non-toxic and having the ability to combine with the flavoring components without causing the decomposition of the flavor. Tartaric acid which is also found in fruits is a good preservative, composed of clear colorless crystals. Tartaric acid had been used for citric acid in the past but is not readily available, and is more expensive than citric acid. Malic acid, a white powder, found in apples, was available and not too expensive. Lactic acid, the acid of cow's milk, a colorless oily liquid, in concentrations of 50, 75 and 85 per cent, can be and is being used as an acidulant. Phosphoric acid, a sirupy liquid having good preservative properties, has been used as the acidulant for kolas. It is more commonly found in concentrations of 75 and 85 per cent. The Subsistence Research & Development Laboratory of the Army Service Forces has authorized the use of lactic, phosphoric and malic acids with citric and tartaric acids as suitable for use in beverages for the Armed Forces.

FLAVORS FOR VARIETY

Changes abroad were not the only ones to influence the extracts manufactured. Food rationing became a reality. No longer were we able to purchase the great variety of foods, that had been our custom in the past. Large demands by the Armed Forces in this country; huge quantities shipped abroad so that our Armed Forces would continue to be well fed; and the enormous amounts of food shipped out to keep our lend-lease commitments with our allies has been a constant drain on our stock piles of food. Rationing became a necessity to insure an equitable distribution of the remaining food. Now more than ever before flavor must provide the variety.

The housewife was on the alert for extracts of good quality that would help her add variety to her meals and break the monotony of serving the same food several times per week. Flavors for the heavier parts of the meal, such as gravy aids, flavoring sauces, salts and meat tenderizers, were the order of the day.

SEEKING A SUBSTITUTE CREAM

The Government's order stopping production of heavy cream to conserve the butter fat for the production of butter brought demands from consumers, bakers and ice cream manufacturers for a substance that would whip light cream. Saccharated lime had been used in the past as a cream thickener and variations of the product began to appear. Used in small quantities they are successful if directions for whipping are carefully followed.

BUTTER FLAVOR DEVELOPED

When the rationing of butter cut down the amount each family could use, farsighted manufacturers saw an opportunity to promote a good butter flavor. Using ingredients usually found in butter (but manufactured from a more available source) with an oil base (peanut or corn oil) a very satisfactory flavor was manufactured. There are also flavoring extracts of the above type for the housewife. In most cases, they are less strong and of the emulsion type. Used in combination with vegetable- or oleomargarine-type shortening a characteristic flavor is obtained.

The fine work done by flavoring extract manufacturers in producing flavors of high quality, plus the inventiveness of the American housewife have helped to provide healthful, nutritious and flavorful meals.

Vanilla Bean Outlook

WHILE NO Mexican vanilla beans can be shipped until next month and while no whole beans will be shipped until May, a survey of the situation by the Vanilla Bean Association of America discloses that the Mexican crop this year is of good quality and is a fair sized one. Hence there is every reason to believe that prices will remain stable according to those who are well informed.

PRICING

Should there be a long delay in the shipment of Bourbon vanilla beans it is conceded that this could influence the price of Mexican vanilla beans. However the Vanilla Bean Association which has rendered yeoman service to the flavoring extract industry and to the other users of vanilla beans, has been working closely with the Government in an endeavor to get cargo space on a boat out of Tamatave, Madagascar, for a sizable shipment of Bourbon vanilla beans. This effort is likely to succeed as the chances are that a shipment may have been made out of Tamatave the latter part of February or early in March.

Under these circumstances it is to the advantage of all to prevent a runaway market of Mexican vanilla bean prices which could only result in the discomfiture of American manufacturers and consumers. There are other factors too which have a decided bearing on the situation. Speculators who feel that Americans can and will pay any price for Mexican beans may well pause to consider that at the moment, with the exception of a few manufacturing consumers in Canada, the United States is the only market for Mexican vanilla beans.

ALCOHOL LIMITS USE

Only so many beans can be used under even the most favorable circumstances; and with governmental restrictions on alcohol there is very little likelihood of more than a normal amount being used. While it is impossible to have a lower market, under the circumstances there is very sound reason why the market should be kept on the present stabilized basis; and all factors in the industry would be well advised to work towards this desirable condition.

REGIMENTATION

The regimentation of morals is as dangerous as the national regimentation of human beings.—*Howard S. Neiman.*

Imported Sugar-Containing Products Added to Ration Order 3—Sugar

THE OFFICE OF PRICE Administration has amended Rev. RO 3, Amendment I, which in part brings under control the use of imported sugar-containing products, such as flavored syrups, candy crystals, etc., which heretofore have been used for industrial purposes in place of rationed cane and beet sugar. Some industrial users have imported the aforesaid products from Cuba, Mexico, Brazil and Venezuela.

The order in part provides that imported sugar-containing products, starting May 1, 1944, will be limited to the amount used during the corresponding period of 1941; as likewise, rationed currency must be surrendered to the local War Pricing and Ration Boards.

Section 1407.176, General, covering imported sugar-containing products, reads as follows:

1. "Imported sugar-containing products" means any product in which sugar was used (or containing an ingredient in which sugar was used), manufactured outside the 48 states of the United States and the District of Columbia. However, the term does not include processed foods (as defined in Revised Ration Order 13) or foods covered by Ration Order 16.

Section 1407.177 is amended to read: amount of imported sugar-containing products which may be used:

(a) Any person may use imported sugar-containing products in the production or manufacture, or in the preparation for service, of other products, without giving up stamps, certificates or checks, as follows:

1. He may, during the period from May 1, 1944, through June 30, 1944, and during any allotment period beginning on or after July 1, 1944, use an amount not exceeding that which he used during the corresponding period in 1941. If, however, during any such period he uses an amount of sugar-containing products (imported), which is less than the amount he used during the same period in 1941, he may use the difference during any subsequent allotment period.

2. He may also use any imported sugar-containing products in his possession or in transit to him on May 1, 1944, if by that date they were already in any of the 48 States of the United States or the District of Columbia and had been released by the Collector of Customs.

(b) If a registered industrial or institutional user desires to use a larger amount of imported sugar-containing products than permitted by paragraph (a), he must first give up to the board ration evidences covering that additional amount.

(c) The above restrictions do not apply to any imported sugar-containing products which a person uses primarily for consumption by himself, members of his family unit, or persons eating at his table or on a farm he operates. . . .

REGULATIONS ON IMPORTED

(e) A person who uses imported sugar-containing products must make and keep a record showing the the amount used by him in each month beginning with May, 1944. In addition, every person who uses sugar-containing products under paragraph (a) (1) of this section must make and keep a record showing the amount he used in each month of 1941 and a person using imported sugar-containing products under paragraph (a) (2) of this section must keep a record showing the amount in his possession or in transit to him on May 1, 1944. (This paragraph does not apply to products used as permitted by paragraph (c).

(f) Every person who uses imported sugar-containing products must, within ten days after the allotment period in which he uses them, report to the district office, in any convenient form, the amount he used in that period. He must in addition, when making his first report, attach a statement showing the amount he used during each quarter of 1941. (This paragraph does not apply to products used as permitted by paragraph (c)).

5. Section 1407.178 is added to read as follows: Deliveries of imported sugar-containing products.

(a) Any person who knows or has reason to believe that a product is an imported sugar-containing product may not deliver it unless the container in which it is packaged when delivered is marked to show plainly that it is an imported sugar-containing product. Any invoice or sales slip involving an imported sugar-containing product must be similarly marked. . . .

Complete records of all transactions must be kept by the importer, and also by the purchaser as to the amount of sugar in the products imported and sold, uses to which it is to be put, etc.

This amendment shall become effective May 1, 1944.

Menthol Production and Pricing

PEPPERMINT PRICES are in process of crystalization. OPA lawyers are studying the pending order at this writing. The best authenticated guess is that prices will be fixed at three levels: growers, dealers, and U.S.P. What the levels will be in figures is a carefully guarded secret. The most generally accepted idea is that they will be around $7. Dealers obviously will get more than growers, and U. S. P. wares will get the highest prices of all. It is assumed the price order will be published soon because something must be done to make the peppermint move from the places where it is now frozen. Those who have it, naturally will not sell until they are convinced they will get some of the expected profit. And the growers do not appear to be anxious to plan any extensive crop for this year until they know what they may expect. WFA as well as OPA have a hand in formulating the prices.

PARAGUAYAN PRODUCTION

Meanwhile, down in Paraguay, they seem to be giving thought seriously to the project of making the production of peppermint oil a serious enterprise. Ascención is the center of the Paraguayan essential oil industry. They distill only one oil, petitgrain. Apparently generally it takes care of itself. The plant grows easily and abundantly in the lush valleys of the Rio Paraguay and Rio Chaco. There are over 1,000 stills in Paraguay which produce normally about 400,000 pounds of petitgrain oil. Our Embassy in Paraguay has looked into the matter of menthol or oil of citronella, and finds none is produced. But there is plenty *mentha pepperita* and *mentha pulegium* and *mentha viridis.* The oil content is estimated as high as 80 per cent. In this country we consider it rich if it yields 50 per cent. The three species of citronella will give 25 per cent menthol. Apparently there is every favorable tendency to grow abundantly. The plants and the grass grow wild along the banks of the Rio Paraguay and the Rio Chaco. Strictly speaking it is a jungle crop. Labor is cheap. Each hectar of ground is estimated capable of producing plants that will yield from 80 to 90 per cent oil content. They say every hundred hectars will grow 12,000 kilos per year; and that no renewal is required for seven years. They get a harvest every four months. It is reported petitgrain is produced at the rate of four to seven kilos per hectar. It would require from two to three months to prepare the ground for commercial production, and peppermint may be grown at the rate of 35 to 45 kilos per hectar. The 1,000 stills in Paraguay are idle for long periods. The stills can produce four to seven kilos per day. It would be possible to produce the oil and ship to us instead of shipping the grass. This would give us a substantial volume from which to obtain menthol. They report that citronella is grown at the rate of 15 to 20 kilos for every hectar per harvest every year.

MENTHOL IN COLOMBIA

Our Embassy in Bogota, Colombia, reports there is in that rich country a eucalyptus oil which is capable of yielding menthol. It also is suggested that spearmint may be grown easily and richly in Colombia, and the thought is that spearmint may be used to produce menthol, and assuredly is a fine resource for the flavors needed for candy, toothpaste, drugs and similar products. The word is that mentha may be grown in the jungles of the Provinces of Narino and Culca.

It is the purpose of the Drugs and Cosmetics Unit of the Chemicals Branch of the Department of Commerce to secure samples of the oils from these South America countries, and to send these oils to its New York office so they may be inspected and tested by those interested. Lester A. Barber, widely known in the industry, the expert on the subject in the Drugs and Cosmetics Unit, has studied the subject in much detail. You may obtain particulars from him.

Spice Situation in the Caribbean

Fletcher Long, chief of the Spices Unit of the WFA Special Commodities Branch, has been surveying the situation in the Caribbean, apparently to discover how the supply of spices from that area may be increased. His report will be issued when he returns during March. Allocation, under FOD-19, of nutmeg was increased, on March 1, from 60 to 70 per cent, and mace from 40 to 80 per cent. At the same time cloves and pimento were released from restrictions. Ginger and pepper were untouched. About the same time it was announced that 50,000 pounds of wormseed would be licensed for importation from Africa, Jamaica and India. Lend-lease sent out 9285 pounds lemon oil in December, and 20,000 pounds peppermint oil. Commerce reported we bought 7000 metric tons of honey from Mexico last year, and that Western Canada produced over 8,000,000 pounds honey in 1943. We will have approximately a billion pounds more fats and oils this year, but the increased needs of the military and lend-lease will likely absorb the surplus.

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U.S.I. CHEMICAL NEWS

March ★ A Monthly Series for Chemists and Executives of the Solvents and Chemical Consuming Industries ★ 1944

Vital War Uses of Butyl Series Continue to Grow

Solvents, Plasticizers, Reagents Consumed on Big-Tonnage Scale

Consumption of butyl alcohol and its derivatives, long before the war, reached such proportions that no industrial chemist would hesitate to place them well up among the most widely useful products of the organic chemical industry. Nevertheless, war requirements have so accelerated the demand for these chemicals that even today's stepped-up production can do little more than keep pace.

Take a typical bomber, for example. Dibutyl phthalate serves as a plasticizer for the lining of its self-sealing gas tanks. Butyl acetate and butyl alcohol are used as solvents for the lacquers and dopes. Butyric acid helps make the plastics used at a dozen points.

Indalone Manufacture

One dramatic example of a butyl compound at work is to be found in the new all-purpose insect repellent which is making such an important contribution to the comfort and safety of our armed forces. Here dibutyl oxalate is used in large quantities as a starting material in the synthesis of Indalone, one of the essential ingredients.

Butyl acetate continues to be used in increasing quantities for high-grade lacquers, where its excellent solvent power and slower evaporation rate are essential. Dibutyl phthalate is one of our most widely used plasticizers, being used with cellulose derivatives, plastics, synthetic resins, and synthetic rubber. Substantial quantities, too, are used for stabilizing smokeless powder.

Maintenance of maximum production of the butyl compounds is another one of the many examples of America's chemical ingenuity. For with the early cutting off of our West Indies molasses supply, it became urgently necessary to switch to new raw materials.

Courtesy Pan American World Airways

One pull and this air-borne life raft is quickly inflated from its "bottle" of liquid CO_2.

Diethyl Oxalate Suggests New Fields for Research

Supplementing an article on diethyl oxalate in the December 1943 issue of Chemical News, here are some further reactions suggestive of potentially valuable lines of research:

1. Diethyl oxalate reacts with PCl_5 to form dichloroethoxyacetoethyl ester. Heated in the presence of palladium black, this ester is decomposed into unaltered oxalate and oxalic ester chloride.

2. Alpha-pyrones, according to a recent patent, are capable of reducing the blood pressure of animals. The patent gives the synthesis of 5-methyl alpha-pyrone as typical:

Propionic aldehyde is condensed with malonic acid in the presence of pyridine to yield 2-pentenoic acid which is then esterified. The resulting ester is condensed with diethyl oxalate in the presence of potassium alcoholate to form the potassium salt of ethyl-4-methyl-5-carbethoxy-5-hydroxy-2.4-pentadiene-1-oate. This is then hydroyzed to the acid, which in turn is heated with acetic acid saturated with hydrogen bromide to form 5-methyl-6-carboxy-alpha-pyrone. The latter, heated with freshly-reduced copper, yields 5-methyl alpha pyrone.

3. If sodium triphenylmethyl is used as the condensing agent, diethyl oxalate reacts with

(*Continued on next page*)

Official U. S. Navy Photo

U. S. Navy pilot and his Dauntless Dive Bomber over Wake Island. His plane, his ammunition, his radio, his instruments . . . all have a butyl chemical somewhere in their background.

Drug and Vitamin Syntheses Hinge on Claisen Reactions

Sodium Ethoxide Finds Widening Utility as Condensing Agent

Although the Claisen type of condensation reaction has been known for many years, it is only comparatively recently that reactions of this type have come into their own in commercial-scale organic synthesis. With every passing month, however, it now becomes increasingly apparent that the Claisen Condensation is one of our most versatile reactions. One measure of the growing utility of this reaction is the increasing demand for sodium ethoxide to serve as the condensing agent.

The simplest "Claisen" is the reaction of 2 mols of ethyl acetate in the presence of sodium ethoxide, to form ethyl acetoacetate. In the production of atebrin, the side chain is formed by the condensation of ethyl acetoacetate with diethyl amino ethyl chloride, again using sodium ethoxide. In the synthesis of vitamin B, two intermediates are formed by Claisen Condensations using sodium ethoxide: acetobutyro lactone and sodium formyl beta-ethoxy ethyl propionate.

Still another example is the preparation of sulfadiazine. Here, large quantities of sodium ethoxide are used to condense ethyl formate with ethyl acetate to form the intermediate, ethyl sodium formyl acetate.

These are a few of the currently significant applications of sodium ethoxide. With the rapidly mounting interest in the production of complex synthetics, the list of uses for this U.S.I. product will doubtlessly multiply.

Carotene Extracted from Sweet Potatoes

Recognizing sweet potatoes as an important potential source of carotene, or provitamin A, government researchers have been investigating possible methods of large-scale extraction. One of these methods, employing acetone, gave a product of 90 per cent purity in a yield of about 39 per cent.

The acetone extraction was carried out in four or five stages, the first two serving to dehydrate the potato pulp but absorbing little carotene. The third and fourth stages, in which a larger volume of acetone was used, extracted most of the carotene which was subsequently crystalized out.

Retting Cocoanut Fibres Facilitated by Alcohol

Use of small quantities of ethanol to reduce the surface tension of alkaline retting baths serves to assure more uniform treatment of both fine and coarse cocoanut fibres, according to a French-owned patent now vested in the Alien Property Custodian. Shorter exposure of the fibres to the solution and consequent prevention of fibre degradation are cited as a further benefit.

The patent describes a cold retting process in which ethanol is added to the bath in the ratio of 5 parts to 10,000, and pH is maintained above 7.

March ★ **U.S.I. CHEMICAL NEWS** ★ 1944

Butanol Used in Making New "Silicate" Lacquers

For all their valuable resistance to weathering and insolubility in solvents, infusible formaldehyde-urea resins do not come up to porcelain-type resins in hardness, water resistance, and adhesion to glass and ceramic surfaces. By incorporating a silicon compound that remains permanently in the resinous phase of these resins, however, an Ohio patentee finds he can combine the advantages of both types of coating.

The recently-granted patent covers a method of bringing ethyl silicate or ethyl orthosilicate together with water and an alkylated reaction product of formaldehyde and urea in a suitable solvent. In the example given, 25 parts of dimethylol urea dimethyl ether, 50 parts of *n*-butanol, 25 parts of ethyl orthosilicate, ¼ part maleic acid and 0.5 to 7.5 parts of water are warmed to 40 to 50 C to cause complete solution. The resulting lacquer gives a colorless, transparent, extremely hard and smooth coating when baked.

Penicillin Extraction

The explanation for the current shortage of amyl acetate is to be found in the tremendously stepped-up penicillin program. This solvent has been selected as the most satisfactory for the extraction of the new "wonder" drug from the penicillin notatum mold.

New Method Developed for Incorporating Vitamins

A process for incorporating Vitamins A and D into milk, tea, coffee, pharmaceuticals and other aqueous media is described in a recent patent. A fish-liver oil containing the vitamins is first saponified. The vitamins are extracted by a suitable solvent to form a concentrate from which constituents insoluble in methyl alcohol are removed at a temperature of —20 C. An ethyl alcohol solution of the concentrate is then mixed with the milk or other aqueous liquid to be vitaminized.

A second patent of interest to food and pharmaceutical manufacturers covers the preparation of a vehicle for vitamins such as A, B, C, D and G. It comprises the refluxing of ethyl alcohol for about an hour with a small proportion of gum tragacanth or gum arabic.

New Fields for Research

(*Continued from preceding page*)

ethyl isobutyrate to form ethyl alpha-ethoxalylisobutyrate in 61% yield.

4. Diethyl oxalate condenses with dicarboxylic esters in the presence of sodium:

(a) With ethyl adipate it gives a 50% yield of diethyl cyclohexane—2,3-dione—1,4-dicarboxylate. The by-products are triethyl cyclopentenetricarboxylate, triethyl cyclopentanoltricarboxylate, and ethyl oxaladipate.

(b) With ethyl sebacate it gives triethyl 1-keto-1,2,9 — nonanetricarboxylate which upon distillation loses CO to form ethyl 1,1,8—octanetricarboxylate, or upon heating with dilute HCl undergoes ketonic decomposition to form alpha-ketononanedicarboxylic acid.

(c) With nonanedicarboxylic ester it gives triethyl 1-keto — 1,2,10 decanetricarboxylate which loses CO upon heating and gives ethyl 1,1,9 nonanetricarboxylate in 30% yield.

(d) With decanedicarboxylic ester it gives triethyl 1-keto — 1,2,11 undecanetricarboxylate which loses CO upon distillation to give ethyl 1,1,10 decanetricarboxylate in 30% yield.

5. Diethyl oxalate condenses in the presence of potassium ethylate with *o*-nitrotoluene to form ethyl *o*-nitrophenylpyroracemate in 75-80% yields, and with *p*-nitrotoluene to form ethyl *p*-nitrophenylpyroracemate in 50-60% yield.

6. Diethyl oxalate condenses with 1-phenyl—3-methyl—5-pyrazolone in the presence of potassium ethylate to give the potassium salt of ethyl 1-phenyl—3-methyl—5-pyrazolone—4-glyoxylate in 90% yield.

7. O-methyl cyclohexanone, reacted with diethyl oxalate in the presence of sodium and alcohol, acidified with sulfuric acid and distilled, gives methylcyclohexenoloxalolacetone.

8. In the presence of Al Cl_3, diethyl oxalate condenses with tertiary aromatic amines.

(a) At low temperatures, the product is ethyl dialkylaminophenylglyoxylate.

(b) At higher temperatures, the product is ethyl tetraalkyldiaminophenylglycollate.

(c) At still higher temperatures, the product is ethyl hexaalkyltriaminotriphenylacetate.

These three products are quantitatively decomposed by H_2SO_4 at 100-150° to give, respectively, esters of dialkylaminobenzoic acids, tetraalkyldiaminobenzophenones, and hexaalkyltriaminotriphenylcarbinols.

9. Diethyl oxalate condenses with tricarballylic ester, giving triethyl diketopentaneethylenetricarboxylate in 70% yield.

TECHNICAL DEVELOPMENTS

Further information on these items may be obtained by writing to U.S.I.

A new wetting agent, said to possess penetrating and emulsifying properties comparable to oleic acid is offered for use in disinfectants and insecticides. Composed of fatty and rosin acids, the new agent is a by-product of the paper industry.
U S I **(No. 790)**

Three new bonding adhesives are being offered for use in joining aluminum, steel, and other metals, as well as ceramics and plastics. Bonds having two or three times the strength of usual riveted joints are said to be easily made. The first adhesive is designed to give maximum strength on materials which can stand baking at 350 F, the second for use at 250 F, the third at 150 F, or lower. **(No. 791)**
U S I

Dampening Vibration of pressure gages is the purpose of a compact new throttling device claimed to facilitate reading and prolong the life of gages connected to pulsating air, water, steam, and oil lines. Particularly valuable with reciprocating pumps and compressors. Helps keep gages in calibration. U S I **(No. 792)**

A new corrosion-proofing product, applied by dip, spray or brush, is reported to dry to a hard, glossy finish in 45 minutes and to be suitable for use in temperatures up to 400 F. Used to protect metals from a wide range of acids and chemicals. Firm also offers heavy, brush-applied product for wood or concrete floors, drains, etc. **(No. 793)**
U S I

A non-wetting coating can be applied to ceramics by a newly-developed chemical whose vapors react at the surface to form a submicroscopic, nonvolatile film. Products also has potential applications in paper, glass and other fields. **(No. 794)**
U S I

Two new organic phosphorous compounds, thought to have potential uses as lubricating oil additives, soap preservatives, anti-oxidants, fire retardants, and plasticizers have been developed experimentally. U S I **(No. 795)**

For curing paint, and similar processes which can be accelerated by application of infra-red rays, a manufacturer has developed gas burners from which practically all radiation is in the form of infra-red rays. U S I **(No. 796)**

A new water-proofing material, applied to fabric by dip, is reported to have little effect on tensile strength, and produce no unpleasant odor during processing. U S I **(No. 797)**

Skin protective creams, of four types specially formulated to meet specific industrial conditions, are offered in pH's ranging from 6.2 to 7.6. **(No. 798)**

Pectin as an Emulsifying Agent*

Pectin as an emulsifying agent is compared with gums tragacanth, karaya and acacia in a study of aqueous emulsions of olive, cottonseed and mineral oils under various conditions

by HARRY LOTZKAR and W. DAYTON MACLAY
Western Regional Research Laboratory, U. S. Department of Agriculture, Albany, Calif.

THE IMPORTATION of gums tragacanth, karaya, acacia and carob was approximately 24 million pounds in 1939[2]. Shipping difficulties have curtailed the importation of these gums, and it has therefore become advisable for the pharmaceutical, cosmetic and food industries to look for satisfactory domestic substitute materials. Pectin, potentially available from the culls and cannery wastes of apples and citrus fruits in amounts in excess of 50 million pounds per year, has shown promise. Goldner and other investigators[3, 7] have declared pectin unsatisfactory as a substitute emulsifying agent for tragacanth and acacia. However, in a subsequent paper Goldner[2] reversed himself and pronounced pectin satisfactory.

STABILITY OF EMULSIONS

So far as can be ascertained, no quantitative study has been made on the relative merits of pectin and these gums as emulsifying agents. King and Mukherjee[5, 6] in defining the stability coefficient of an emulsion as the reciprocal of the rate of change of the interfacial area per unit area of fresh emulsion interface, established a quantitative criterion of emulsion stability. The present study was undertaken to determine quantitatively the stability of emulsions of olive oil, cottonseed oil and mineral oil with water, stabilized with pectin, tragacanth, karaya and acacia under diverse conditions of acidity, ratio of oil to water and concentration of emulsifying agent. Changes in the emulsions were followed by measuring the pH, viscosity and specific interfacial area of the dispersed oil at regular intervals over a period of 10 weeks; and the stability coefficients were computed from the data on the specific surfaces.

PREPARATION OF EMULSIONS

Emulsions were made up to contain by volume 25, 40 and 60 per cent olive oil, cottonseed oil or mineral oil dispersed in water whose pH was adjusted by the addition of hydrochloric acid and stabilized with pectin (citrus, 200 grade, rapid set), tragacanth (U. S. P.), karaya (xxx grade), and acacia (No. 1 grade). The emulsifying agent was dispersed in the oil, and then the diluent was added at one time. The mixture was shaken in a jar until emulsified. The coarse emulsion was transferred to a mortar and triturated until smooth. The product was passed through a hand homogenizer three times and finally mixed in a Waring Blendor for 10 minutes. Methyl-*p*-hydroxybenzoate, 0.1 per cent, was added as a preservative, and the emulsions were stored in the dark at 22 deg. C.

At two-week intervals photomicrographs of the emulsions were taken at a magnification of 144 to 200 times. A

DETERMINATION METHOD

Spencer bright-line hemacytometer was used as a slide, and the exact magnification was determined from the lines on the hemacytometer. The method used in calculating the specific interfacial areas by means of size-frequency analysis of the photomicrographs was

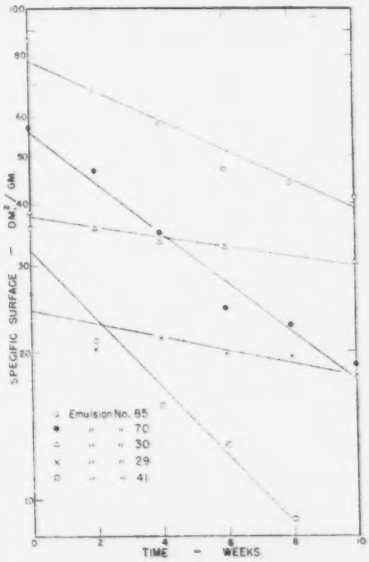

FIGURE 1.
Emulsion interfacial areas vs. storage time

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described by King and Mukherjee.[3] A glass electrode potentiometer was used in measuring the hydrogen-ion activities; a Stormer viscometer, calibrated against a series of aqueous glycerol solutions of known viscosities,[5] was used to measure the viscosities in centipoises of the emulsions at 22 deg. C.

EMULSION STABILITY

To represent numerically the stability of these emulsions it is convenient to assume that the specific surface changes with time in some simple mathematical manner. King and Mukherjee[4] assumed that the rate of change of the specific surface of an emulsion is proportional to the initial specific surface of the emulsion. However, in plotting their data they found it necessary to assume two rates, an initial rapid change followed by a much slower change. This behavior suggests that the change in the specific surface may be an exponential function of the time. Therefore, in treating the present data it was assumed that the rate of change of the specific surface at any time is proportional to the specific surface at that time. In other words,

$$\frac{-d\sigma}{dt} = k'\sigma = \frac{\sigma}{k}$$

where σ = specific surface, k' = instability coefficient and k = stability coefficient.

In Figure 1 the specific surface as ordinate is plotted against the time as abscissa on semilog paper for several representative runs to illustrate the agreement between the data on the change of specific surface with time and the exponential hypothesis. The lines were determined by fitting the data to the above equation by the method of least squares. The instability coefficients, from which the stability coefficients were determined, were calculated to the nearest 5×10^{-3}, the estimated experimental error in k'. Values recorded as >200 imply that the apparent variation in the specific surface may be due to experimental error and that no significant change in the specific surface had taken place.

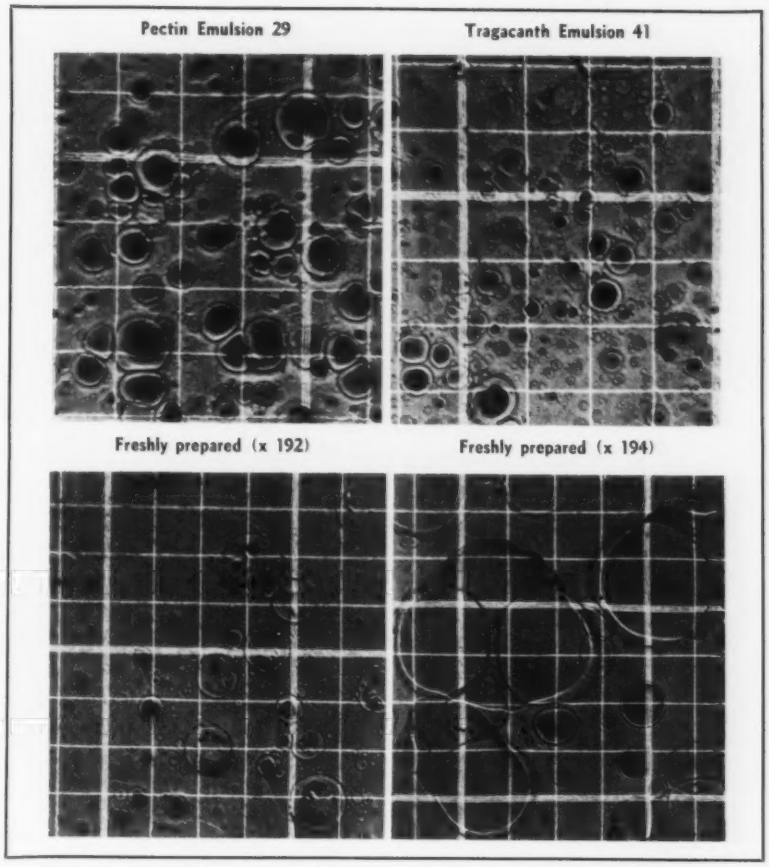

Figure 2.—Degradation of comparable emulsions stabilized with Pectin and Tragacanth

Table 1—Data for 40 Per Cent Olive Oil Emulsions

NO.	WT. PER CENT STABILIZER	pH of DILUENT	pH OF EMULSION 0 DAYS	pH OF EMULSION 60 DAYS	VISCOSITY, CENTIPOISES 0 DAYS	VISCOSITY, CENTIPOISES 60 DAYS	INITIAL SP. SURFACE σ_0, SQ. DM./G.	STABILITY COEFFICIENT k, WEEKS
			PECTIN-STABILIZED EMULSIONS					
1	0.5	6.5	4.5	4.6	98	B	17	5
2	0.5	2.6	2.9	3.0	79	60	26	17
3	0.5	1.6	1.7	2.0	74	43	51	4
4	1	6.5	3.8	3.9	500	380	24	50
5	1	2.6	3.0	3.8	400	12	46	3
6	1	1.6	1.9	2.0	325	275	46	50
7	1.5	6.5	3.9	4.2	1700	50	23	>200
8	1.5	2.6	3.0	3.0	1600	1500	37	43
9	1.5	1.6	2.0	2.0	1100	1000	56	>200
			TRAGACANTH-STABILIZED EMULSIONS					
10	0.5	6.5	5.9	4.8	120	25	15	8
11	0.5	2.6	3.7	3.7	110	95	18	9
12	0.5	1.6	1.8	1.9	90	50	17	14
13	1	6.5	5.9	4.1	480	145	29	10
14	1	2.6	4.0	4.0	485	325	14	17
15	1	1.6	2.0	2.1	375	200	24	>200
16	1.5	6.5	5.8	4.4	2000	42	12	29
17	1.5	2.6	4.0	3.6	2000	43	17	17
18	1.5	1.6	2.1	2.3	1500	600	28	>200
			ACACIA-STABILIZED EMULSIONS					
19	1	6.5	5.6	5.6	10	9	89	17
20	1	2.6	3.7	3.8	8	7	55	33
21	1	1.6	1.9	2.1	7	6	17	50
22	3	6.5	5.2	4.6	26	20	117	25
23	3	2.6	4.0	3.9	18	18	101	25
24	3	1.6	2.7	2.7	14	11	80	17
25	6	6.5	5.1	4.3	50	47	145	29
26	6	2.6	4.0	4.2	50	41	128	>200
27	6	1.6	3.2	3.2	30	30	131	25

DETERIORATION OF EMULSIONS

In several cases the emulsions either had broken within the period of observation or had deteriorated to such an extent that it was improbable the photomicrographs taken under these conditions were representative. Thus, deformities of the oil particles and evidence of free oil in the photomicrographs were interpreted as gross deterioration of the emulsions; these photomicrographs were discarded, and the calculations of the stability coeffi-

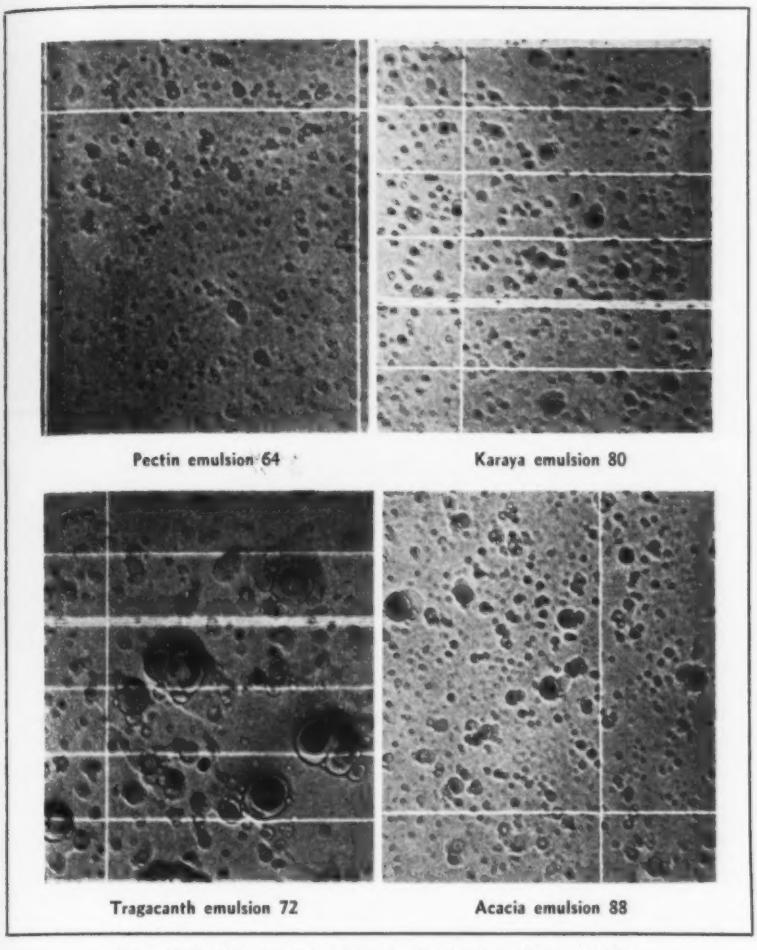

Figure 3. Particle size of stabilized mineral oil emulsions (x 196)

cients were made from the photomicrographs that were considered acceptable. Representative photomicrographs are shown in Figures 2 and 3.

The data on viscosity, pH, the graphically determined initial specific surface and the calculated values of the stability coefficients are recorded in Tables I, II and III. Because the generalizations deduced from the study of the 40 per cent oil emulsions are likewise applicable to the 25 and 60 per cent oil emulsions, the tables for the latter are omitted. The values for initial specific surface (σ_0) are expressed in units of square decimeters per gram of dispersed oil; those for stability coefficient are expressed in dimensions of weeks. *B* denotes that the emulsion broke within the period of observation and *M* denotes mayonnaise consistency; i. e., too viscous to be poured from the container.

The scope of this investigation limited the study to the effect of acidity, concentration of emulsifying agent and ratio of oil to water on the pH, viscosity and initial specific surface. The present data are adequate for comparison of the instability of the emulsions but are inadequate for reaching conclusions—for example, on the mechanism of the degradation of the emulsions or on the effect of acidity or concentration of emulsifying agent on particle size. The assumption of exponential change of specific surface with time is purely arbitrary, for the surface measurements reported here are not sufficiently precise to establish the correct mathematical dependence.

PARTICLE SIZE AND VISCOSITY

Table II reveals a definite effect of acidity of the cottonseed oil emulsions on the average size of oil droplets as indicated by initial specific surface. The average particle size decreases with increasing acidity, except for the tragacanth-stabilized emulsions where it increases. Tables I and III also reveal trends in particle size with acidity, but some of these trends are not consistent with those in Table II. The data show that the viscosity of the emulsions decreases with increasing acidity. In general, the tragacanth-stabilized emulsions are coarse and viscous, the acacia emulsions are fine and fluid, the karaya emulsions are gelatinous and the pectin emulsions are fine and viscous.

STABILITY COEFFICIENTS

The consistent trend in the stability coefficients of the tragacanth-stabilized emulsions with the acidity of the emulsions is in accord with the observations by Kranz and Gordon[8] that tragacanth-

Table II—Data for 40 Per Cent Cottonseed Oil Emulsions

NO.	WT. PER CENT STABILIZER	pH of DILUENT	pH OF EMULSION 0 WEEKS	pH OF EMULSION 10 WEEKS	VISCOSITY, CENTIPOISES 0 WEEKS	VISCOSITY, CENTIPOISES 10 WEEKS	INITIAL SP. SURFACE σ_0, SQ. DM./G.	STABILITY COEFFICIENT k, WEEKS
			PECTIN-STABILIZED EMULSIONS					
28	0.75	6.6	4.2	3.5	210	15	16	11
29	0.75	4.0	3.6	3.6	200	85	24	33
30	0.75	2.9	3.2	3.2	195	140	38	40
31	0.75	2.1	2.5	2.5	170	160	48	>200
32	1.25	6.6	3.7	3.2	940	30	29	6
33	1.25	4.0	3.3	3.4	950	930	30	100
34	1.25	2.9	3.1	3.2	880	880	41	>200
35	1.25	2.1	2.6	2.6	735	680	54	>200
36	1.75	6.6	3.6	3.2	3400	*B*	34	5
37	1.75	4.0	3.3	3.3	2800	2800	36	67
38	1.75	2.9	3.1	3.4	2500	2800	38	67
39	1.75	2.1	2.7	2.8	2025	2075	52	200
			TRAGACANTH-STABILIZED EMULSIONS					
40	0.75	6.6	6.1	4.4[a]	270	*B*	34	7
41	0.75	4.0	5.0	4.1[a]	240	*B*	32	6
42	0.75	2.9	4.2	4.3[a]	250	*B*	23	20
43	0.75	2.1	2.8	2.9	205	240	11	67
44	1.25	6.6	5.5	4.4[a]	880	*B*	44	2
45	1.25	4.0	5.0	4.1	800	440	21	12
46	1.25	2.9	4.3	4.1[a]	750	*B*	18	9
47	1.25	2.1	3.2	3.4	580	630	13	200
48	1.75	6.6	5.8	3.9[a]	*M*	*B*	16	12
49	1.75	4.0	5.1	3.9	1600	860	15	100
50	1.75	2.9	4.4	4.3	1750	600	16	15
51	1.75	2.1	3.4	3.6	1550	1060	14	100

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Table II (Continued)

NO.	WT. PER CENT STABILIZER	pH of DILUENT	pH OF EMULSION 0 WEEKS	pH OF EMULSION 10 WEEKS	VISCOSITY, CENTIPOISES 0 WEEKS	VISCOSITY, CENTIPOISES 10 WEEKS	INITIAL SP. SURFACE a_0, SQ. DM./G.	STABILITY COEFFICIENT k, WEEKS
			KARAYA-STABILIZED EMULSIONS					
52	1.25	4.0	4.3	4.5	*M*	1050	12	100
53	1.25	2.9	4.2	4.2	2050	1950	24	33
54	1.25	2.1	3.7	3.7	1300	1000	130	40
			ACACIA-STABILIZED EMULSIONS					
55	1.75	6.6	5.6	4.5	11	7	47	200
56	1.75	2.9	4.1	4.5	10	10	56	40
57	1.75	2.1	3.2	3.4	9	....	59	25
58	3.5	6.6	5.3	4.4	19	17	60	167
59	3.5	2.9	4.1	3.9	18	18	66	100

a At the end of 5 weeks.

Table III—Data for 40 Per Cent Oil Mineral Emulsions

NO.	WT. PER CENT STABILIZER	pH of DILUENT	pH OF EMULSION 0 WEEKS	pH OF EMULSION 10 WEEKS	VISCOSITY, CENTIPOISES 0 WEEKS	VISCOSITY, CENTIPOISES 10 WEEKS	INITIAL SP. SURFACE a_0, SQ. DM./G.	STABILITY COEFFICIENT k, WEEKS
			PECTIN-STABILIZED EMULSIONS					
60	1	5.9	3.2	3.3	410	380	99	>200
61	1	4.0	3.2	3.3	425	390	97	>200
62	1	3.0	3.3	3.2	415	385	97	200
63	1	2.0	2.5	2.5	350	330	76	200
64	1.5	5.9	3.2	3.2	1275	1080	129	>200
65	1.5	4.0	3.2	3.2	1300	1070	132	>200
66	1.5	3.0	3.2	3.2	1220	1080	121	200
67	1.5	2.0	2.7	2.6	1030	880	100	200
			TRAGACANTH-STABILIZED EMULSIONS					
68	1	5.9	5.5	4.1	510	340	51	6
69	1	4.0	5.5	4.1	490	335	56	6
70	1	3.0	4.9	4.6	500	350	56	9
71	1	2.0	2.9	3.0	410	395	14	43
72	1.5	5.9	5.5	4.1	970	635	50	2
73	1.5	4.0	5.5	4.0	970	665	44	2
74	1.5	3.0	5.0	4.1	900	700	48	2
75	1.5	2.0	3.3	3.3	820	785	15	200
			KARAYA-STABILIZED EMULSIONS					
76	1	5.9	5.2	4.5	1070	695	113	100
77	1	4.0	4.4	4.4	940	770	103	>200
78	1	3.0	4.4	4.3	975	665	121	100
79	1	2.0	3.7	3.7	650	645	116	200
80	1.5	5.9	5.1	4.4	*M*	*M*	120	100
81	1.5	4.0	5.1	4.4	*M*	*M*	135	200
82	1.5	3.0	4.4	4.3	*M*	*M*	127	200
83	1.5	2.0	3.8	3.8	*M*	*M*	129	200
			ACACIA-STABILIZED EMULSIONS					
84	2	5.9	5.0	4.8	16	13	71	17
85	2	4.0	4.4	4.7	15	11	78	15
86	2	3.0	4.4	4.5	15	15	84	15
87	2	2.0	3.4	3.4	12	13	63	33
88	4.5	5.9	5.1	4.4	32	29	120	40
89	4.5	4.0	4.4	4.4	32	30	127	40
90	4.5	3.0	4.4	4.3	31	34	115	>200
91	4.5	2.0	3.7	3.7	26	27	119	200

stabilized emulsions of Nujol and cottonseed oil have maximum stability between diluent pH 1.9 and 2.3.

The trend of the stability coefficients with acidity of pectin-stabilized emulsions of cottonseed oil is parallel to that of tragacanth-stabilized emulsions. However, there appears to be no particular trend for the pectin-stabilized emulsions of olive oil and mineral oil. The stability data for the acacia-stabilized emulsions are in agreement with the conclusion of Kranz and Gordon[5] that acacia-stabilized emulsions are stable over the entire pH range. Over the pH range investigated, the emulsifying efficiency of karaya does not vary appreciably with the acidity of the emulsions.

The present data support the view taken by King and Mukherjee[4] that the degree of dispersion of the oil is unrelated to the stability. Also, no dependency between initial viscosity and stability has been observed. Greater viscosity may prevent creaming but does not necessarily enhance stability. Thus, acacia-stabilized emulsions are much less viscous than the emulsions prepared with pectin and the other gums, yet they are as stable as the latter.

The stability of an emulsion may depend on factors influencing the chemical stability of the emulsifying agent as well as on the physical characteristics of the freshly prepared emulsion. The correlation between stability coefficients and the change in viscosity of the emulsions on storage lends some weight to this view.

VARIATION OF EFFICIENCY

The variation of emulsifying efficiency with acidity and from oil to oil limits generalizations that can be made on the comparative emulsifying efficiencies of pectin and the gums. There is little difference between pectin and tragacanth as emulsifying agents for olive oil. Both are more effective at the lower pH values. Pectin appears to be slightly better than tragacanth as an emulsifying agent for cottonseed oil. It is possible to make these comparisons because the stability trends of pectin and tragacanth are practically parallel. As an emulsifying agent of mineral oil, pectin is clearly superior to tragacanth and acacia, and is at least equal to karaya. This is in agreement with the results of Merrill[6] who measured the mechanical stability of emulsions 62, 70, 78 and 86 by means of the recently developed centrifugal force method.

In presenting these data the authors hope that this information will furnish the pharmaceutical and food industries and other users of difficultly obtainable emulsifying agents with a guide to what may be expected of pectin as an emulsifying agent under various conditions.

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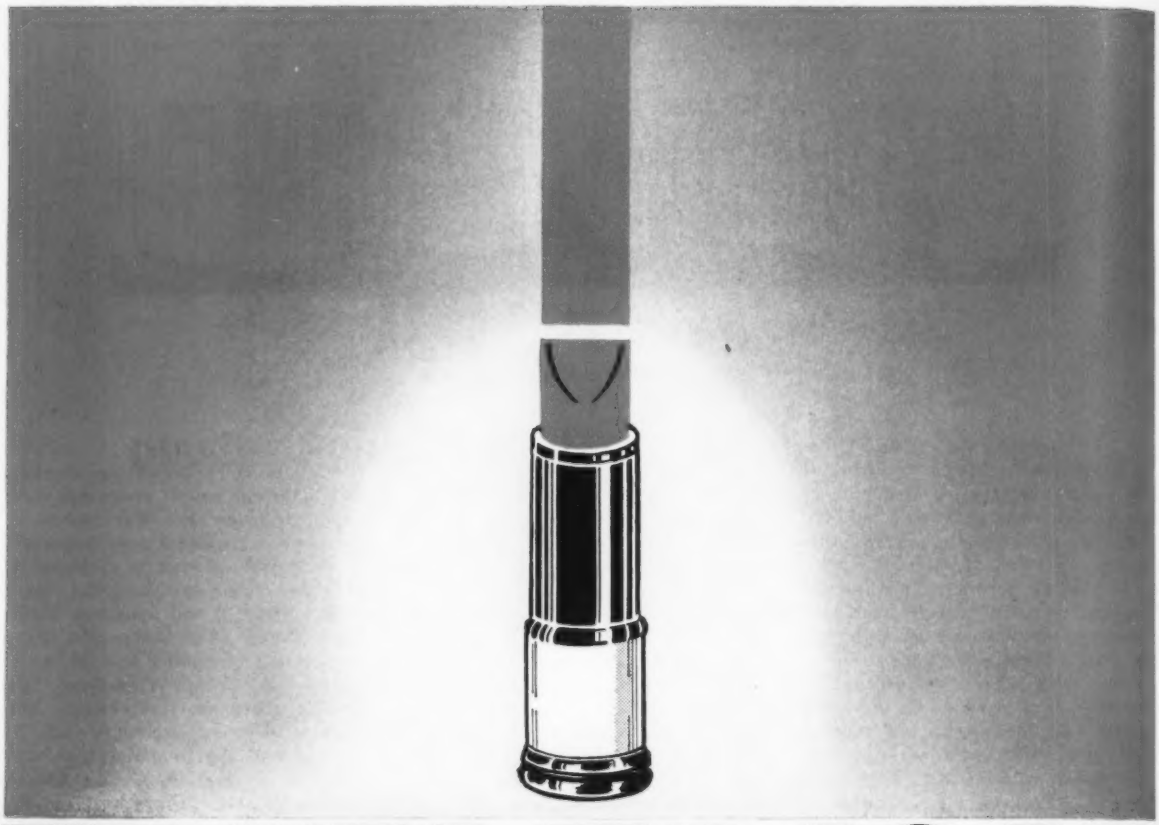
by ARNOLD KRUCKMAN

THERE ARE specific reasons to assume that the essential oils industry will have a Federal Industry Advisory Committee by the time this letter is published. It is described here as a Federal Committee because its functions should be broader than liaison and service in connection with only one branch of the war agencies. If our information is correct the Committee, stemming from War Foods Administration, also is expected to counsel with OPA, WPB, and possibly will have direct relations with FEA, and old line permanent agencies such as the Bureau of Foreign and Domestic Commerce of the Department of Commerce. So far as this reporter knows, an Industry Advisory Committee having such substantial and diverse connections never before has been established in the war set-up. Virtually all industry committees now in existence are solely accredited to one agency. There are WPB Industry Advisory Committees, OPA Industry Advisory Committees, ODT Industry Advisory Committees, and others; but each Committee is limited to action within the purposes of the agency for which it has been created. Obviously this situation, while a logical consequence of the speed and urgency of war conditions, has resulted in overlapping and duplication and some waste by reason of lack of coordination. It is recognized now that there is much likelihood most of the Industry Advisory Committees will remain in existence for considerable time after the war is over. The necessity for close cooperation between industries and government officials in post-war times is so palpable that the chief consideration is in regard to the form this potentially permanent relation will assume.

It is probable some reasoning along these lines has been in the mind of Chief H. C. Albin of WFA Special Commodities Branch, and in the mind of A. L. Kalish, chief of the Unit in the Branch which is responsible for essential oils. Lest it be misunderstood, the thought should be clear that the Essential Oils Committee, when it is established, will directly be a part of WFA and will function under the responsibility of WFA. The liaison between WFA and OPA is logical, because WFA has certain ultimate authority over prices for things that enter into food and related products. It is natural that the WFA Essential Oils Industry Advisory Committee should also act as advisor and consultant to the unit in OPA concerned with essential oils for flavors, cosmetics, toiletries and similar products. WPB obviously is actively concerned with some phases of the non-food chemical aspects of essential oils, the phases which focus particularly on chemical applications and uses. And Elmer Tysdal, chief of the Cosmetics Unit in the Chemical Branch of WPB, is in effect the friend at court to whom all elements of the industry go for guidance and assistance about problems ranging from containers to fats and oils.

IMPORT PROBLEMS

It seems likely the first meeting of the new Committee will be held here either late in March or early in April. It is natural to assume that domestic price levels for essential oils may be one of the first subjects on the agenda. And it is just as natural to assume that the various problems connected with imports will come up for discussion. These not only involve materials that may be available in Italy, North Africa, and puzzling problems, such as Madagascar, but there also may be discussions about relations with London, and with South America. It will be natural for the whole gamut of import problems to be reviewed. This would include consideration of the question about the classification of importers. Current thought seems to rest on the "historic basis" (a popular phrase here, right now), which would mean that those who cannot prove they were importers before the War cannot be classified as importers now. Apparently there will be enough problems to keep the Committee busy for more than a day, if it will remain in Washington longer. The Government chairman of the Committee will be A. L. Kalish. It is his Committee. He brought about its establishment. The word is that the Committee will be composed of representatives from the firms of W. J. Bush & Co.; George Lueders & Co.; Fritzsche Brothers, Inc.; Dodge & Olcott; Norda Essential Oil and Chemical Co.; Givaudan-Delawanna, Inc.; Polak & Schwarz, Inc.; Newman, Buzlee & Wolfe; and Walter Jelly. Apparently it is intended to balance in such manner as to represent all elements of the industry, the intermediate as well as the others. The probabilities are that the individuals who will represent the firms have been indicated by WFA, but often it is not feasible for the specific persons to serve, in which case the choice of the representative is largely left to the firm itself. The individual must, however, be acceptable to the Government. As you know, WPB Industry Advisory Committees now have the power to stop any new limitation or conservation orders they do not approve. WPB Industry Advisory Committees also are guaranteed against trouble with the Department of Justice by reason of any action taken by the Committees. It has not been announced whether or not WFA Committees are cloaked with similar powers and protection. WPB Industry Committees have considerable automatic power, including the right to meet on their own initiative, and they have the authority to appeal from government industry chiefs to those above them. It is quite likely the powers and limitations of the WFA Essential Oils Industry Advisory Committee will be defined without delay.



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ALLOCATIONS

There is further good news in the word that the industry will receive a limited quota of lanolin during March. It is the first release of lanolin for months. The quantity is very limited, but the fact that even a small quantity is released is deemed an indication of the fact that more may come. It also was announced that 400,000 pounds of cellulose acetate has been released for March. This allocation does not bear any specific label for lipsticks or packages. It is an over-all allocation. It is understood the cellulose acetate now supplied contains an ingredient which enables the molder to make the required articles without an allocation of phthalate plasticizer. Phthalate plasticizer is now entirely out of the picture. None can be obtained for civilian uses. The understanding is that an approaching limitation in the supply of cellulose acetate flake will make cellulose acetate tighter. Urgent appeals from two firms impelled WPB to release frozen carbon steel sufficient to manufacture 3,000,000 lipstick containers. The total released for the months of October, December and March, now grosses 7,000,000 steel lipstick containers.

ISOPROPYL ALCOHOL DENIED

Even isopropyl alcohol has now been denied to the cosmetics and toiletries industry. Allocations were cut off in February and there will be none in March. Alcohol is rapidly becoming tighter in the strictest sense. It is estimated military, lend-lease, rubber, and other essential needs will absorb approximately 650,000,000 gallons during 1944, 60,000,000 gallons more than our present producing facilities are able to supply. There were, in 1943, 140,000,000 gallons in the stockpile. This is now the only immediate source of supply for the surplus required. It is estimated the draft this year will cut the stockpile down to something in the neighborhood of 25,000,000 gallons.

AVAILABLE SOURCES NOT USED

It is not very clear why resources in the Caribbean have not been used to provide more alcohol; nor has it been made clear why the timber plants in the West have been unable to secure the metals and the labor to place in operation the plants which are able to make 50 gallons of ethyl alcohol from every 1000 pounds of woodwaste. At least four or five plants are reported to be able to go into production in three months if they could get the green light to go ahead. There are huge quantities of woodwaste ready for conversion. It also is reported potatoes could easily be used to make alcohol. WPB recently announced it had hopes that rye may be used for additional alcohol production, the plan being to use rye flours. Jamaica has made plans to build six pilot plants to manufacture alcohol from rejected and surplus bananas. It is hoped to use 3,000,000 stems of bananas annually for the purpose. FEA announced it hoped to secure 20,000,000 gallons of alcohol from Cuba to be produced from blackstrap molasses during 1944. WPB also issued a warning that Order M-30, apparently widely misunderstood, does NOT provide a small order exemption of 7900 gallons per quarter. The exemption is solely a technical method of obtaining some deliveries. The order apparently permits those who used not more than 162 gallons for cosmetics and toiletries from July, 1941, to June 30, 1942, and held the necessary Bureau of Internal Revenue permit, to use the same quantity per quarter during the year ending June 30, 1945.

RESIN GUMS IN NEW GUINEA

Out of WPB has come word that there appear to be plenty essential resin gums in New Guinea and other points, gums such as copal, hiroie and rassag; and WPB sympathizes with the desire of American importers to bring the gums to America. But it reports that the Army and Navy oppose resumption of these importations at this time because the civilian activity might divert local manpower and transportation from essential military activity. WPB stresses that this is the fundamental reason why importers find it difficult to bring goods from North Africa, where their efforts also are opposed by the State Department. The State Department, according to WPB, wishes all trade from North Africa to come to America by way of the U. S. Commercial Company, subordinate of the FEA. The FEA, incidentally, still is suffering from indigestion of the multiple parts it has tried to assimilate, but it is reported that it is gradually settling down to more orderly operation. Meanwhile, however, American importers have repeatedly complained, off the record, to WPB and other agencies, that the British do not appear to be hampered by the same governmental obstacles that make American trade difficult. The report of the Federation of British Industries has naturally been the subject of much discussion. Its plan to set up an economic council through which the British Government is to guide the flow of the empire's post-war trade is regarded as an open declaration of competition with American traders. The British wish to extend their area of assimilation in order that they may increase their exports at least 40 to 50 per cent over pre-war levels.

TAX BILL A THING OF THE PAST

The new tax law, adopted by the vote which over-rode the President's veto, raised excise taxes on toilet preparations from 10 to 20 per cent. It is reported most retailers plan to state the new tax separately. OPA regulations require that if the tax has been stated separately the retailer must continue the practise. It is expected OPA will require that the tax must be stated even if it is included in the price. The Bureau of Internal Revenue definitely requires that the tax be stated. When the new excises go into effect, April 1, the tax on transportation increases from 10 to 15 per cent; on long distance phone calls from 20 to 25 per cent; on domestic telegraph or cable or radio message, from 15 to 25 per cent; local phone service, from 10 to 15 per cent. At the same time, rates on mail increase one cent on local service; domestic air mail rates from six to eight cents; money order rates increase by four to 15 cents; registered mail will cost 33 1/3 per cent more; insured mail and C.O.D. fees, will be doubled.

Under the order by the Stabilization Office, vacation schedules and practices which were established after Oct. 31, 1942, or Oct. 27, 1942, must be approved by War Labor Board and by the Treasury. In effect, the effort is to cut down any payment of wages or salaries without a return in service. Those who take vacations without pay are not required to obtain approval. Those who work during permitted vacations may accept pay for vacation they do not take.

L-20 AMENDED

An amendment to L-20 prohibits use of cellophane for cosmetics, soaps, deodorants, spices, but may be used as a replacement of metal for collapsible tubes for tooth paste. And, of course, March 1, it became no longer necessary to collect toothpaste and shaving cream tubes. During the 23 months the public surrendered empty tubes to secure fresh supplies more than 1,000,000 pounds tin was recovered. An order, apparently modeled on the peppermint freeze order, is expected to be issued during March, which will tie up 90 per cent of all stocks of benzaldehyde, used with food flavors, as well as a source of alcohol, and certain poisons sometimes required in making explosives. It is expected the order will be in effect April 1, and will freeze all benzaldehyde for several months. It is used particularly in connection with synthetic cinnamon flavoring compounds.

War Check List for Feb.—Government Regulations

Digest of Federal rules and regulations on price control, allocations and other regulatory measures of cosmetic, soap and flavoring industries issued or proposed during the past month

Cellophane Limitation Order L-20 has been amended

In amending L-20 the definition of cellophane has been changed to read, "Cellophane means a film of plasticized regenerated cellulose, whether in nonmoisture proof or moisture proof grades and whether or not heat sealing, and cellulose caps or bands. It does not include any material which has been used to package, wrap or seal any product or in manufacture."

It is still forbidden to use cellophane for packaging, wrapping, sealing or manufacture of cosmetics, soaps, deodorants, including paradichlorobenzene, and cleaning materials, except as a replacement of metal for collapsible tubes for toothpaste, unless such cellophane is waste material.

Another change is that old stocks of cellophane in the hands of the users can no longer be used.

Preference Order M-78 has been revoked

The revocation of Preference order M-78 covering mercury and chemicals derived from mercury, removes the restrictions to 30 per cent of prior use on ammoniated mercury in cosmetic preparations.

M-30 small order alcohol ruling changed

Allocation Order M-30 covering ethyl alcohol has been amended but most of the amendments are merely clarifications. However the small order provision relating to toilet goods has been changed.

Under the former order persons who purchased ethyl alcohol prior to July 1, 1943, in quantities not exceeding one drum per month were permitted to continue to purchase such quantities. Under the new order, where the purpose is the manufacture of tooth cleaning preparations, all toiletries and cosmetics, perfume and perfume materials, tinctures and fixatives, shampoos, toilet soaps, including shaving cream and toilet waters the quantity received in any calendar quarter shall not (without specific written authorization) exceed 50 per cent of the quantity used for the same purpose in the corresponding calendar quarter of the 12-month period ended June 30, 1941. Those holding permits to use during the calendar period not more than 160 gallons for use in the manufacture of toiletries and cosmetics may still do so. This does not mean that the alcohol delivered must be used for the same toilet preparation as that used in the former quarter.

In regard to the use for antiseptics for oral uses, including Antiseptic Solution N.F. and mouth washes the amount shall not be more than 60 per cent of amount used for same purpose in similar quarter.

In the case of flavoring extracts and vinegar manufacture the amount shall not exceed 110 per cent of the correspondent calendar quarter of the 12-month period ended June 30, 1941; for rubbing alcohol the limitation is 15 per cent.

L-332 restricts the sale of container machinery

General limitation order L-332 which restricts delivery of new, used or reconditioned container machinery, used in the manufacture of containers and in general filling, labelling, wrapping and other packaging machinery having a retail sales value of $500 or more has been issued by the War Production Board.

As of March 1, 1944, a rating of AA-5 or higher is required to place order for such machinery or to accept orders.

Conservation order M-241-a amended

According to an amendment to general conservation order M-241-a the printing of all wrappers which is permitted by the terms of the order has been limited to "printed wrappers (excluding gift wrappers").

Method of private brand pricing revised

MPR 282 covering pricing of certain private formula drug and cosmetic products has been completely rewritten, and according to the rewritten form is supposed to be a simplification of estimating the price rulings. However this is quite to the contrary; it is one of the most complicated ever issued by OPA and the information necessary to arrive at the correct pricing is most complicated.

The new regulation also states that the maximum price of a private formula product which is the same as a product priced before February 11, shall be the maximum price established prior to that date, provided the number of units to be manufactured in any one batch or single continuous run does not vary by more than 30 per cent and the maximum price was established on a sale to a non-affiliated buyer or to the same buyer whether affiliated or not.

When a private formula cannot be priced according to above method there are two methods which may be chosen for pricing; 1. The comparable product method; and 2. Where no comparable product exists, the maximum price for such new private formula product shall be established by filing a request with OPA. Form No. 6812:277. This must include name and address and status of purchaser, number of units to be sold and to be manufactured in one batch, together with other information which may be found in the order itself Federal Register, Tuesday, February 8, 1944, p. 1525.

Cellulose acetate control to be placed under order M-326-b

The control and allocation of cellulose acetate and cellulose acetate butyrate molding powder for the month of March is continued in allocation order M-326-a. However, as of April 1, it will be taken care of under order M-326-b.

When the new order comes into effect, deliveries will be forbidden ex-

cept as authorized by WPB. This includes both suppliers and molders. It also includes scrap as well as prime molding powder. The small order exemption is 100 pounds per calendar month. It is also necessary for the molder to know the end uses to which the product is to be put.

Use of castor oil again extended

FDO-32, covering fats and oils has been amended so that the restriction on the use and distribution of castor oil is suspended for another three months, extending the time thereby to June 30, 1944.

Titanium dioxide control extended indefinitely

Control of titanium dioxide which was to have terminated automatically on February 29, was on that date extended indefinitely by the issuance of Amendment M-353. The order states that "no person shall give any effect to any preference ratings below AA-2 on any purchase order for titanium dioxide unless the person placing such purchase order furnishes a certificate" on a form prescribed by the WPB.

This is simply a continuation for an indefinite period of the controls established last December.

P-43 further amended to benefit laboratories

That laboratories may more readily secure materials, order P-43 has been amended to permit laboratories to use the symbol V-9 to get controlled materials, and a preference rating of AA-2, (AA-1 in the case of serial numbered laboratories) to get Class A products.

FDO-19 establishes quotas for restricted spices

Food Distribution Order 19 has been amended, placing certain spices on the restricted list. These are given quarterly quotas — percentages based on packing or use during the corresponding quarter of 1941, as follows:

RESTRICTED SPICE	QUOTA PERCENTAGES
Black pepper and white pepper	40
Cassia (cinnamon)	35
Ginger	100
Mace	80
Nutmeg	70

Conservation Order M-290 controls containerboard

Conservation Order M-290 covering container board has been revised so that the production, sale and delivery of containerboard, becomes a function of the WPB which will now control all use including boxes and cases made from it.

CMP Regulation No. 5 has been amended

CMP Regulation No. 5 dealing with maintenance, repair and operating supplies other than certain chemicals which are under CMP Regulation No. 3 has been amended. In purchasing controlled materials, according to this order the following certificate must be placed on the delivery order:

"CMP allotments symbol MRO—The undersigned certifies that the controlled materials covered by this order are required for essential maintenance, repair or operating supplies, to be used for a purpose listed in Schedule I or Schedule II of CMP Regulation No. 5 and that delivery thereof will not result in a violation of the quantity restrictions contained in paragraph (f) of said regulation."

For other than controlled materials, such as in the case of the manufacture of perfumes, cosmetics and other toilet preparations, preference ratings are AA-5.

For drugs, medicinals, pharmaceuticals and biologicals, AA-1 is given; for soap, soap chips, flakes and powders the rating is AA-2. A rating of AA-2 is given to the production of closures, all types; AA-1 to the production of containers, all types except fiber drums, gas cylinders and ton containers, and nailed wooden boxes and crates; also to production of hairpins, bobpins and hair curlers, razors and razor blades.

Rating order P-146 issued on shipping containers

Preference Rating Order P-146 issued February 29th by the War Production Board applies to the purchase of fiber shipping containers, including solid fiber containers .045 or heavier and corrugated fiber shipping containers of any weight, as well as solid fiber or corrugated fiber to be used for wrapping, packaging or otherwise protecting a product during shipment and to solid fiber or corrugated fiber interior fittings cut to size for use in any type container.

Manufacturers who have a rating to get production materials — materials which will be physically incorporated into a product—may apply the rating which they have for such materials to the purchase of fiber shipping containers, otherwise there are no exceptions.

Manufacturers of glass jars, folding boxes, cans, etc., known as inside containers, may not use their production material ratings or the special catch-all ratings to get fiber shipping containers for delivery of empty inside containers, but they may use the ratings to which their customers are entitled provided they have written authorization from their customer and describe the end use to which they are to be put.

In this industry the following ratings obtain:

Cosmetics and toiletries	AA-5
Dentifrices, shaving creams and soaps	AA-5
Facial tissues	AA-3
Drugs, medicinals, and biologicals	AA-2X
Soap	AA-3

P-140 is now limited to wooden containers only. The ratings given under the new P-140 of interest to this industry are:

The use of wooden shipping containers for cosmetics and dentifrices is forbidden by limitation order L-232 and the use of these containers is also forbidden for soap when packed in glass textiles, metal or paper.

P-146 to be the pattern for folding and set-up boxes

The rating pattern set up in P-146 is considered to be the model for the rating pattern to be adopted in the folding and set-up box order which WPB sources now state will probably be issued May 1.

WPB sources frankly admit that P-146 is the pattern. This means that AA-5 is the rating that cosmetics and toilet articles can expect in the folding and set-up box order when it is finally issued.

Exemption—small order—on aluminum chloride changed

An amendment to the allocation order M-287 covering anhydrous aluminum chloride changes the small order exemption to 600 pounds for any user in any one calendar month.

Citric acid and peroxygen chemicals allocated

Peroxygen chemicals and citric acid have been placed under direct allocation control by placing them under general allocation order M-300. M-321 covering citric acid has been revoked with the placing of it under M-300.

FDO 94 restricts purchases of flaxseed

In order that all flaxseed crushers may be assured a portion of the available 1943 domestic crop supply, the War Food Administration has issued FDO 94, which restricts purchases in excess of seasonal needs.

Order M-154 covering nitrocellulose amended

Amended order M-154 permits not more than the use of 50 pounds of nitro-cellulose in any calendar month.

New Products, Ideas and Processes

Propylene Glycol, N.F.

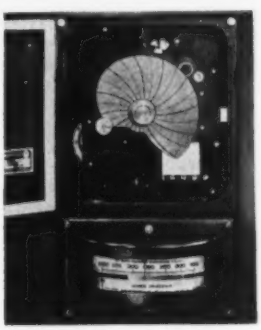
Propylene Glycol, N.F., has been developed by The Dow Chemical Company, Midland, Mich., and is now available for sale to manufacturers.

Diversified solvency and preservative properties suit propylene glycol, N.F., for service in many fields. It has excellent qualities as a flavoring vehicle, as a plasticizer and chemical intermediate for food processing and is also used in cosmetic and pharmaceutical manufacture. Additional characteristics point out possible new uses.

More information in regard to this product may be secured from the company or by writing the company for a booklet containing technical information.

Heating or cooling instruments

A line of instruments to enforce desired heating or cooling program has been announced by Wheelco Instruments Company. These instruments, named Chronotrols, are built around the company's line of pyrometers, potentiometers, thermometers and resistance thermometers, all of which employ an electronic principle of effecting temperature control. The temperature cycle desired is cut on a disc, and its rotation by a synchronous motor moves the temperature setting lever of the control instrument. See accompanying instrument.



Chronotrol of Wheelco

"DDT" insecticide for army

At the request of the Government, Merck & Co., Inc., Rahway, N. J., is expanding its present facilities for large-scale production of the powerful insecticide known as "DDT," which is now being used by the Armed Forces as a protection agains typhus fever.

Used by the Army Medical Department on a mass scale in the North African campaign, "DDT" proved the most effective protection against body lice. Chemically known as dichlorodiphenyl-trichloro-ethane, "DDT" is also highly effective against flies and other insects, and thus has numerous possibilities for post-war use in various fields.

A new wetting agent

Unitol E is a new wetting agent, by Union Bag & Paper Co., who claim that this product possesses penetrating and emulsifying properties comparable to oleic acid. This product is offered for use in disinfectants and insecticides. It is composed of fatty acids and rosin acids and is a by-product of the paper industry.

Skin protective creams

Skin protective creams of four types, specially formulated to meet specific industrial conditions, offered in pH ranging from 6.2 to 7.6 are offered by Nielco Laboratories. These creams, the company claims, will meet the requirements necessary to a satisfactory product to protect the skin.

A polish for glass

A polishing mixture suitable for use on glass or metals is prepared by boiling about four ounces of comminuted castile soap in about one cup of water, pouring the solution into 6.25 pounds of whiting, together with 1.5 ounces of aqueous ammonia, one ounce of olive oil and 0.5 ounce of oil of sassafras. The mass is mixed and kneaded until it has a relatively stiff moldable consistency. Louis I. Smith. *U. S. Patent* No. 2,322,066.

Plastic skin

Development of an approved method of packaging items for Army Ordnance, making use of a simple dip-coating of an ethyl cellulose compound has been announced by Dow Chemical Co., Midland, Mich.

Delicate machine parts which otherwise require grease coating and laborious wrapping in two or three layers of moisture-proof papers can be dipped in the plastic coating and acquire in a split second a "skin" which is impervious to corrosion and rough handling.

On arrival at the battlefront, the coating is simply slit with a knife and peeled off like a banana skin, and the part is ready for instant use.

By this method a reduction of 62 to 90 per cent in packaging man-hours has been demonstrated in addition to the tremendous saving of paper.

Announcements

Fritzsche's Perfumers' Handbook

Fritzsche Brothers, Inc., 76 Ninth Ave., New York, N. Y., have just issued its Perfumers' Handbook and Catalog. In its 268 pages is compressed a great wealth of information relating to essential oils, aromatic chemicals and perfumers' materials in general which cannot be found in any other single volume. For this reason, if for no other, the company believes that it will prove to be one of the handiest and most useful of reference books for the perfumer.

This book is decidedly a guide and handbook of highly useful content, carefully edited, technically accurate and fully indexed to provide a quick convenient source of information frequently needed by the perfumer and by the buyer of aromatic raw materials.

The book is divided into three parts: Part I includes essential oils, natural flower oils, animal fixatives, aromatic chemicals and other variously related materials. As the prices of these materials are influenced by many factors and are subject to frequent change, it was deemed impractical to include quotations in this section. In all other respects however each item is fully described. The current prices for this group may be had by referring to the regular price list, a pocket for which is provided in the front of the book.

Part II comprises synthetic flower oils and specialties, absolute composites, compounded aromatic bases, including perfumes for alcoholic extracts, colognes and toilet waters, creams and lotions, powders, perfumes soluble in low proof alcoholic preparations, water soluble perfumes, perfumes for miscellaneous cosmetic preparations, bath salts, hair preparations, liquid and solid incense, prefixation agents and fixatives, perfumes for soaps and technical specialties. As these products are fairly stable in price, the price is given together with descriptions of each and suggestions for their use.

Part III gives some very valuable information in the form of tables, such as boiling points of aromatic chemicals, melting points, changing from Centigrade to Fahrenheit and vice-versa, etc.

W. J. Bush & Co.'s 1944 Catalog

This year W. J. Bush & Co., Inc., 11 East 38th Street, New York, N. Y., is issuing a catalog instead of the usual price list. Most of the company's specialties are still available and are expected to continue so. Although some delays are unavoidable under present conditions every effort will be made to facilitate filling your requirements.

NEWS and EVENTS

Cosmetic manufacturing officials attend news dinner at Yale Club

Salesmanagers and executives of cosmetic manufacturing companies in the metropolitan area were the guests of the New York *Daily News* at the Yale Club on the evening of March 2 when a graphic moving picture in color was shown to visualize the magnitude and wealth of the great market stemming out from New York. Facts disclosed by a carefully analyzed survey over a period of several years that should be considered in making plans to develop business were made graphic. In an enlightening way, dry but very relevant facts were made interesting. Harold B. Sherwood, advertising manager of the New York *Daily News* proved that he had histrionic ability in the opening and closing addresses which he made in the movie; and also in the movie Herbert Steele gave a lucid explanation of the various scenes and charts that were shown.

Benjamin L. Moyer, manager of national advertising, and Lyle Finch, assistant manager of national advertising, were present in person; and Mr. Moyer in response to insistent demands made a brief speech at the conclusion of the dinner which followed the showing of the moving picture. Jimmy Jemail, the inquiring photographer, related some of his amusing experiences and then asked one of his clever questions which was answered by six of the guests. The affair was arranged by Edward P. Russell of the *Daily News*, who acted as toastmaster. At the conclusion of the affair Walter Conklin, president of the Foragers of America, thanked Mr. Russell for the instructive evening and the audience paid its tribute to Mr. Russell by lustily singing "For He's a Jolly Good Fellow."

Standard Synthetics, Inc., suffers loss through fire

Standard Synthetics, Inc. sustained a loss through fire in its new premises at 30 West 26th St., New York, N. Y., on Feb. 11. Due to water pouring in from the floor above, their newly furnished offices and parts of the warehouse were badly flooded, and work was interrupted for two days. As the firm is exceptionally busy just now, this delay is doubly inconvenient, though fortunately the damage can be repaired and the loss of essential oils, etc., was not very great.

Elmer Freed becomes sales manager for Northam Warren

Northam Warren, President of the Northam Warren Corporation, announces the appointment of Elmer Freed as Sales Manager of the Corporation, to succeed Captain Northam Warren, Jr., who is on leave of absence serving with the U. S. Army. Mr. Freed has a long background of experience in the cosmetic field, having joined the Northam Warren Sales Staff in 1936, coming from the Elias Shaker Company in Chicago. During his association with Northam Warren, Mr. Freed has been in charge of sales in several major territories.

Elmer Freed

Chester H. Briggs, who has been Acting Sales Manager, has resigned and will announce his plans shortly.

American Management Ass'n holds conference in Chicago

The annual Packaging Conference of the American Management Association will be held March 28-30 at the Palmer House in Chicago. Packaging and packing requirements for shipping to the armed forces overseas will be explained by a panel of Army and Navy officers. The conference will be held in conjunction with the Association's 14th Annual Packaging Exposition, March 28-31.

Scientific research survey initiated by Proprietary Ass'n of America

As a basis for one aspect of its public relations, the Proprietary Ass'n of America has initiated a survey among its members to determine the extent to which they are conducting and supporting scientific research.

George F. Weber elected ass't sec'y, director of George Lueders & Co.

Mr. George F. Weber was elected assistant secretary and a director of George Lueders & Co., Inc., at a recent Directors' meeting of the company. Mr. Weber has been with the company 18 years. He is the son of Mr. Ferdinand Weber, first vice-president and treasurer of the company, who celebrated his fiftieth anniversary October of last year.

Florasynth Laboratories holds meeting and banquet in Montreal

Plans for the coming year were outlined and discussed at a meeting of executives of Florasynth Laboratories (Canada) Ltd. in the Montreal office recently. Attending were: Dr. Alexander M. Katz, president; Dr. William Lakritz, vice-president; Joseph Fein, treasurer, and Charles P. Kramer, secretary. Officers of the Montreal company who were present included Jack Lewis, general manager of the Montreal plant, and K. I. Letster of the Toronto branch.

A general meeting followed, highlighted by a banquet at the Ritz Carlton Hotel in the evening. Here, Dr. Katz showed motion pictures of the cultivation and production of Mexican Vanilla Beans, which he had taken on his recent visit to Mexico. Other motion pictures dealt with the production of aromatic chemicals, perfume and flavoring materials in the New York plant. During the remainder of the evening, various reports and commentaries were heard from the other executives of the company.

Miss Armisen of Dodge & Olcott speaks on Latin American oils

At a meeting held March 1st by the Spanish Speaking Club at Steinway Hall, Miss Dolores Lluy Armisen, in charge of the Latin American Department of Dodge & Olcott Co., New York, N. Y., delivered a lecture on Perfume and Spice Oils. Special mention was made about the oils now being imported from Central and South America as well as from the West Indies.

Annual D & C Industry dinner pays tribute to war effort

As a war-time tribute to the Drug, Chemical and Allied Industries for their outstanding performance in the war effort and to the Military, Naval and Public Health Services which have so ably directed these achievements, the Drug, Chemical and Allied Trades Section of the New York Board of Trade, Inc., dedicated its 10th Annual Dinner held the night of March 9th, in the ballroom of the Waldorf-Astoria.

This occasion, the largest annual dinner of its kind on record was restricted by war-time conditions to an attendance of close to 2200 leaders of the Drug and Chemical industries from all parts of the country.

E. T. T. Williams, Becton, Dickinson & Co., chairman of the Drug and Allied Trade Section, served as toastmaster.

The following list of speakers addressed the assemblage:

Surgeon General Thomas Parran, United States Public Health Service;

Major General William N. Porter, chief, Chemical Warfare Service, U. S. Army;

Major General George F. Lull, Deputy Surgeon General, U. S. Army;

Major General Clifford L. Corbin, Director of Procurement, Div. Office of Quartermaster General, U. S. Army;

Rear Admiral Y. W. Smith, M.C., Bureau of Medicine and Surgery, U. S. Navy;

Rear Admiral Kent C. Melhorn, M.C., Chief of Material Division, Bureau of Medicine and Surgery, U. S. Navy.

Extract from letter from H. W. Graesser-Thomas, London

R. R. Webb, of W. J. Bush & Co., 9 East 38th Street, New York, N. Y., has given us the following extract from a letter he has received from H. W. Graesser-Thomas, in London. The extract follows:

"Perhaps you can realize there is no exaggeration to say that hearing a voice in London without either an American or foreign accent is definitely the exception, but it is surprising how used we have become to it. This is no doubt owing to the fact that London appears to almost be the central headquarters of the various nations concerned.

"Many thanks for your copies of *Life*. Judging by these it seems that there are still semi-luxury goods available on your side of the water. Over here even my wife, who is a semi-invalid, has to be registered at a labor exchange, and has to do her quota of work; and absolutely every man and woman up to 50 years of age is on either direct war work or some civil duties which are in themselves essential towards the running of the war, and, believe me, there is absolutely no exception whatsoever. For such work as fire-watching duties the age for men goes up to 65. There is no such thing as smart sales girls left in any of our shops. It is true a few chorus girls are still permitted, but they are only allowed provided they do a certain proportion of war work; girls are called up for full-time factory work simply on age and number, irrespective of their social position. When one thinks this over I think you will agree it is quite amazing how much has been accomplished, but the transfer has been so gradual and continual that it is hard to imagine what we would have thought about it in 1939 had we been told that a girl who had been brought up in refined surroundings would be called up and sent, say to Wigan to work nine hours a day in a factory and have to live in a Hostel under the strictest discipline, but I assure you this is a fact. Also boys from the best schools (16 and 17 years of age) have been drafted to mine villages of South Wales and Lancashire, billeted in miner's cottages and made to go down into the pits."

International Beauty Show held at Hotel, Pennsylvania, New York

The International Beauty Show held its annual show at the Hotel Pennsylvania, New York, N. Y., on March 13-15.

Allied Drug and Cosmetic Ass'n of Michigan install officers

The newly elected officers of the Allied Drug and Cosmetic Association of Michigan were installed at the last meeting at the Detroit Leland Hotel. The officers are:

President: E. E. Van Allsburg, Ecclestone Chemical Company;

Vice-President: Gordon Buck, Standard Oil Company, Indiana;

Secretary: Maison G. deNavarre, Maison G. deNavarre Associates;

Treasurer: Stewart Cowell, J. T. Baker Chemical Company;

Executive Committee: William M. Russell, Monsanto Chemical Company; A. R. Vicary, Mark W. Allen Company; A. S. Bedell, Beauty Counselors, Inc.; Donald Melville, Frank W. Kerr Company.

After the installation of the officers, the speaker of the evening, Dr. L. S. Roehm, Dow Chemical Co., Midland, Mich., gave a discussion on the manufacture of magnesium, followed by motion pictures on the same subject.

Anne Wright joins force of Schiaparelli, Inc.

Schiaparelli, Inc., 610 Fifth Ave., New York, N. Y., has announced the appointment of Miss Anne Wright as vice-president and general manager.

Plans for expansion lead to name change of Nat'l Wax Refining Co.

The name of the National Wax Refining Company has been changed to "International Wax Refining Company," effective April 15, 1944, it has been announced by Frank W. Clarke, general manager. The change was initiated because the company intends to expand their scope of operations in the immediate future, and in the post-war period.

The company has just received a contract from the Navy Department for 40,000 pounds of Carnauba Wax at 73 cents per pound, F.O.B. New York.

Report of the California Flavoring Extract Ass'n meeting

At a dinner meeting of the Flavoring Extract Manufacturers' Association of California held in Los Angeles, February 17, Bud Evans, M. E. Bear Co., was elected president for the next 12 months. The new vice-president is Frank Fetsch, King's X-Flavor and Extract Company; Art Reusch, Bakers' and Confectioners' Supply Company of California, was chosen secretary, and Fred Dunn, Mefford Chemical Company, treasurer, was re-elected, all of Los Angeles.

Mr. Evans succeeds Charles S. Marston, Jr., Neil Flavor Laboratory, Los Angeles, who had served the association as its president a few years ago was unable to attend the gathering because of business which took him out of town. Mr. Marston wrote a letter of appreciation for support during his long term of office and praising Membership Committee Chairman Charles Myers for the exceptionally good work he has done the past two years.

David G. Schearer, executive vice-president of the Trucking Industries Association, the principal speaker, discussed transportation problems today on the Pacific Coast. He assured his hearers that although the situation was a difficult one, the industry would continue to carry on the coming year.

A round-table discussion brought out a demand for more association bulletins, and it was agreed to acceed to this request.

Richard Hudnut wins suit on "DuBarry" trade mark

Richard Hudnut recently received a final decree in the United States District Court for the District of Massachusetts permanently denying to William J. Pailey any right to use the Richard Hudnut trade mark "DuBarry" as the name of any salon, the trade name for any toilet preparation or in any manner. Richard Hudnut operates the DuBarry Salon and has a line of DuBarry beauty preparations.

Dr. Sobell, Dr. Thomssen accept new positions in J. A. Watkins Co.

Dr. Otto H. Sobell, who for the last three and one-half years has been research chemist of the J. R. Watkins Co., Winona, Minn., has been appointed technical director of the company and will have charge of the manufacture of all products at the Winona plant and also at the other manufacturing plants of the company in Newark, N. J., Memphis, Tenn., Oakland, Calif., Montreal and Winnipeg in Canada and Melbourne, Australia.

At the same time the company announced that Dr. E. G. Thomssen, who until recently had charge of the company's technical developments, now is located in the east in a new capacity and that Allyn M. Ramsden has been made factory superintendent here.

Dr. Sobell studied at the Imperial Institute of Technology in Vienna, Austria, and was graduated as chemical engineer in 1928. He obtained his Ph.D. in chemistry at the University of Vienna in 1930. Two years later, he received an honorary degree for advanced studies in chemistry from the Sorbonne university of Paris. Before joining the J. R. Watkins Co., Dr. Sobell was connected with several internationally known chemical firms in Europe and the United States.

The laboratories of the Winona plant are now being completely remodeled and enlarged to take care of the company's expanding volume of business. A new biochemical pharmaceutical laboratory will be installed.

As technical director, Dr. Sobell's duties are to maintain and improve the quality of the company's products, as well as develop new products. The company now manufactures more than 250 food products, spices, extracts, medicines, tablets, vitamin preparations, household aids, toiletries, insecticides and stock and poultry preparations.

Dr. Thomssen, the company announced, now is devoting his entire efforts to the firm's rapidly-increased business supplying products for the Army, Navy and Lend-Lease from its several plants. He has been associated with the company since 1923 as chief chemist. Dr. and Mrs. Thomssen now are in the east.

Mr. Ramsden, an employe since 1929, has had charge of the production of food products. A large portion of the production at the Winona plant to meet war contracts has been under Mr. Ramsden's supervision. He is a graduate of the University of Minnesota.

Production of Canadian toilet preparations industry increases

The toilet preparations industry in Canada in 1942 is reviewed as follows in a report just issued by the Chemicals and Allied Products group of the Dominion Bureau of Statistics:

Production from the toilet preparations industry was valued at $12,201,445 in 1942 as compared with $10,155,763 in 1941 and $8,305,916 in 1940.

In the annual census of manufacturing establishments in Canada, the operating firms are arranged in a number of industrial groups to which the various factories are classified in accordance with the nature of their main products. Under this arrangement the toilet preparations industry includes all establishments which are occupied chiefly in making perfumes, toilet waters, face creams, tooth pastes, etc.; but this industry accounts for only about 72 per cent of the Canadian output of toilet preparations as a number of concerns in other industries make this class of goods as a minor part of their business.

In 1942 a total of 88 establishments were included in this industry, 52 being located in Ontario, 28 in Quebec, 4 in Manitoba, 3 in British Columbia and 1 in Saskatchewan.

FROM M M & R's hard-working laboratories have come a large and varied group of scientifically produced replacements for currently high-priced and hard-to-get essential oils, perfuming and flavoring materials. They are rendering meritorious service and have won the plaudits of numerous users.

Many of these new products like Citronella Replacement #21 M M & R, Imitation Oil Cassia M M & R, Oil Rose Geranium Replacement M M & R, Oil Lemongrass Replacement #619 M M & R, Lavender Oil Replacement #30 M M & R and Imitation Spearmint Oil M M & R are going to earn permanent berths because they are doing a remarkable job now; *will continue to do a more economical job* than the "regulars."

Write for Replacement Pamphlet

This new listing of M M & R Replacements will serve as a ready reference. Our technical department will be happy to furnish detailed recommendations.

MAGNUS, MABEE & REYNARD, INC.

SINCE 1895...ONE OF THE WORLD'S GREATEST SUPPLIERS OF ESSENTIAL OILS

16 DESBROSSES STREET, NEW YORK CITY • 221 NORTH LASALLE STREET, CHICAGO

San Francisco: Braun, Knecht, Heimann Co. • Los Angeles: Braun Corp. • Seattle, Portland, Spokane: Van Waters & Rogers, Inc. • Toronto: Richardson Agencies

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Many years ago we first offered fine paper boxes to cosmetic manufacturers. It is significant that since then most of the concerns with whom we began business still call upon us to meet their needs.

•

Despite the shortage of raw materials it is our pledge never to depart from the high standard of quality that has always been identified with KARL VOSS paper boxes.

•

There is no finer cosmetic container than a KARL VOSS box.

•

KARL VOSS CORPORATION

DIVISION OF SHOUP-OWENS INC

HOBOKEN NEW JERSEY

JUST OUT!

BULLETIN on REPLACEMENTS

FOR ESSENTIAL RAW MATERIALS

(No. 12)

Special 44-page Reference Bulletin, Prepared by M. G. deNavarre, Ph.C., B.S., Technical Editor of the AMERICAN PERFUMER.

An invaluable reference work, authoritative and comprehensive . . . on the present availability of materials, replacements . . . and 162 convenient sources of supply. All listings of products cross-indexed by number with manufacturers.

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AMERICAN PERFUMER

AND ESSENTIAL OIL REVIEW

9 East 38th St., New York 16, N. Y.

Mrs. Huhn urges Fashion Center include cosmetic section

Mayor LaGuardia's Committee for the World Fashion Center has "by-passed beauty" in recommending that New York undertake construction of a giant apparel arts center and war memorial after the war, claims Constance Luft Huhn, president of the George W. Luft Co., manufacturers of Tangee lipsticks.

Strongly endorsing the fashion center project as "both practical and cultural" in a letter to Grover Whalen, chairman of the Committee, Mrs. Huhn also pointed out that "the Committee's recommendations make no mention at all of the part that the art of beauty could play in the project."

"I am sure that the entire cosmetic industry would be happy to contribute to the glamour and completeness of the proposed Fashion Center," she wrote. "After all, beauty is the glory of woman . . . and the women of America spend $563,000,000 a year for cosmetics to keep that beauty glorified."

"Commercially," Mrs. Huhn said, "a bow to beauty in addition to other collateral industries concerned with fashion would be profitable to the project."

She also urged that plans be amended to include a wing or section for salons devoted to cosmetics and perfumes. "It does no harm to be thinking now of the post-war world," Mrs. Huhn stated in an interview, "especially in terms of jobs, as the Mayor's Committee points out — and cosmetics contribute not only to beauty but also to high levels of employment."

Ass'n for Protection of Trade Marks plans enlarged program

A meeting of the Advisory Committee for the Association for the protection of Trade Mark Rights, Inc., composed of the following members, Fitch, Herpicide, Jeris, Kreml, Pinaud, Vitalis, and Wildroot, was held. Maxwell M. Alexander, general counsel and director of operations of the Association, discussed the substitution of Trade Marked merchandise in the barber shops throughout the country.

The manufacturers went on record as favoring an enlarged program for 1944 and appropriated additional funds to prosecute violators who were trying to capitalize on present trade conditions by pawning off substitute merchandise for the Trade Mark products.

Lewis Heiss, associate counsel, and Milton C. Kean of Philadelphia, chief investigator, presented their reports.

Sonneborn sets up employees' retirement plan

An employees' retirement plan which provides both monthly pension payments and death benefits without cost to the individual participant has been instituted by L. Sonneborn Sons, Inc., according to an announcement by Dr. Ferdinand Sonneborn, president. Its benefits apply to all employees of this class between the ages of 31½ and 60½ who have been with the company 30 months or more on Jan. 28, 1943. Eligible employees in the armed forces will be enrolled in the plan on the January 28 following their return.

D. R. Means named ass't vice-president of Pittsburgh concern

Dwight R. Means, who has been associated with the Columbia Chemical Djvision of the Pittsburgh Plate Glass Company for 21 years, has been named assistant to the vice-president. The announcement was made by E. T. Asplundh, vice-president in charge of the division. After attending the University of Kansas, Mr. Means joined the company as a draftsman. Prior to his new appointment he was technical director and had previously served as research director and assistant superintendent.

Flavoring Extract Manufacturers will hold May meeting in New York

The annual meeting of the Flavoring Extract Manufacturers' Association will be held May 22-23 at the Hotel New Yorker, New York. Plans for a large and interesting meeting are already well under way.

Lewis S. Cobb appointed salesman for Shulton, Inc.

Lewis S. Cobb has been appointed salesman for Shulton, Inc. Mr. Cobb will represent Shulton in metropolitan New York, Westchester County and Staten Island.

Mich. Allied Drug & Cosmetic Ass'n holds meeting in Detroit

The Allied Drug & Cosmetic Association of Michigan met February 23 at the Detroit-Leland Hotel, Detroit, Mich. Speaker at the meeting was Dr. William Stericker of the Philadelphis Quartz Company, who gave an illustrated talk on the manufacture and use of silicate. The Entertainment Committee consisted of: E. E. Van Allsburg, president; Ed DeNavarre, secretary and A. S. Bedell, chairman.

Obituaries

James H. MacMahon

James H. MacMahon, 83, for nearly 40 years connected with the Mathieson Alkali Works, died at his home in Buffalo, N. Y., on Feb. 7. He was intimately connected with the early development of chemical manufacturing in the United States, and was widely known in the paper and other chemical-consuming industries.

At the time of his retirement from active service in 1935, he was technical representative of the company and in charge of development work.

Charles F. Michaels

Charles F. Michaels, chairman of the board of McKesson & Robbins, Inc., and long a national figure in the wholesale drug trade, died February 21 in a San Francisco hospital after a two weeks' illness. He was 74 years old.

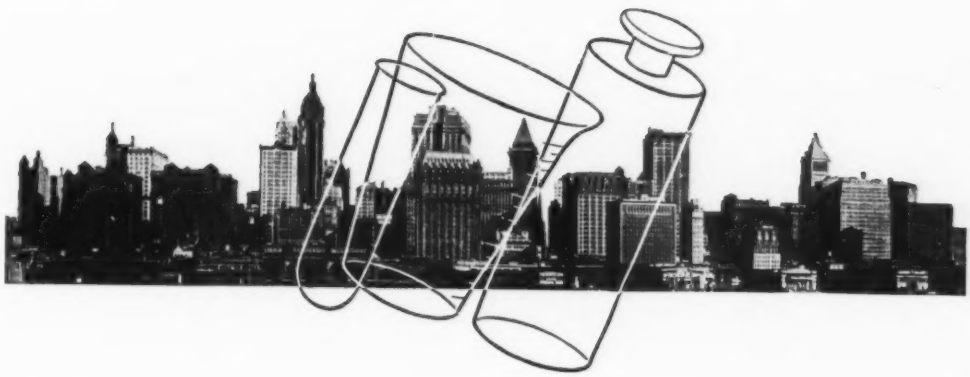
Mr. Michaels was formerly executive vice-president and president of McKesson and Robbins, and when the company was reorganized in 1941, he was elected chairman of the board. Mr. Michaels served as president of the National Wholesale Druggists' Association in 1927. He had been president of the Menlo School and Junior College since 1925, and was a former treasurer of the town of Atherton, Cal., where he made his home.

Jesse Jay Ricks

Jesse Jay Ricks, chairman of the board of the Union Carbide and Carbon Corporation, died in his home at Plandome, L. I., Feb. 20, after a brief illness. He was 64 years old.

Mr. Ricks took a prominent part in the formation of the corporation in 1917, served as vice-president until 1925 when he was elected president, and became chairman of the board in 1941. Almost 20 years ago he instituted a policy of liberal research which aided the growth of the many interests of the corporation.

Mr. Ricks was a member of the American and City Bar Associations and a former trustee of the Central Hanover Bank and Trust Company. He leaves a widow, three sons, a daughter and a sister.



Most Products in Tight Supply

NORMALLY TRADE in essential oils and aromatic chemicals is quiet during February, but buyers fully aware of the acute shortages of many imported articles as well as the probable effects the growing manpower shortage will have on new production of various domestic materials, were showing considerable interest in the market with a view of being assured of a comfortable supply of materials in the months ahead.

STOCKS AT LOWEST EBB

The additional inquiries revealed, however, that supplies of a long list of articles are smaller than at any time since the war started, and that major suppliers are more inclined to hold whatever stocks they have on hand for their own trade. The past month brought about an upward trend in benzaldehyde prices, and some houses having had their allotments reduced by approximately 50 per cent since the start of the year, were forced to completely withdraw all offers of the article from the market. Linalool from bois de rose oil remained in an exceedingly tight position, and some houses in the trade were forced to discontinue quoting firm prices on cinamic aldehyde, amyl aldehyde, benzol benzoate and phenyl acetaldehyde. Quotations on citral displayed a hardening tendency in keeping with a stronger tone in lemongrass oil.

Hydrogen peroxide, sodium peroxide and sodium perborate have been placed under allocation by the War Production Board. While certain vital uses of these oxidizing agents must be supplied in full, a substantial percentage of the supply is used for textile finishing and other less essential processes.

It is in this direction that consumption will be curtailed and no substantial reduction in the types used by the public for antiseptic purposes is expected.

BRAZILIAN MENTHOL

While hardly a pound of menthol could be had on spot it was understood that representatives of some of the large consumers were in Brazil buying up all available lots of new crop material. According to reports $20 per pound or more was paid for new crop goods. Meanwhile rumors were current in the local market to the effect that the OPA was planning to announce a dollars and cents ceiling on the article. Some indicated that the ceiling would be $18.25 per pound. Up to this time individual ceilings had been granted by OPA which in some instances according to reports were as high as $20 to $24 per pound. It is believed that should a dollars and cents ceiling be established here, it would eventually force some adjustment in the floor price in Brazil which is $29 per kilo at the present time.

BRAZILIAN vs. AMERICAN MENTHOL

The high prices paid for Brazilian menthol are regarded as highly significant since it is recalled that in the early days of the war, when supplies were cut off from the Far East, and when some study was made with respect to producing menthol from American peppermint oil, it was at that time understood that a cost of $25 in making menthol from American peppermint oil would be too high. In connection with the spread between the two prices, such as the cost of Brazilian menthol and probable cost of domestic, it is interesting to learn that reports are being circulated in the trade to the effect that those consumers who will need menthol over the coming year must be prepared to pay fancy prices for it in Brazil, especially since the producers fully realize that under present circumstances they are the only source of supply of this all important article.

Meanwhile in the peppermint oil trade warnings were sounded that unless OPA shortly takes some steps to increase maximum prices, farmers are likely to turn their attention to other crops. Under present circumstances it is not likely farmers will increase their mint acreage this year.

HIGH PRICES FOR VANILLA BEANS

Flavoring extract manufacturers can expect to pay fancy prices for vanilla beans if the hundred tons or more of Bourbon beans fail to arrive here from Madagascar. Representatives of the French Colonial Government seemed confident that some way would be found to ship the beans to this country but up to late last month, the goods which had been purchased in late January and early February, had not yet left the Island.

Spot prices on Bourbon beans worked higher in the face of a moderate inquiry and very limited supplies. Quotations in Mexico are firm and may possibly go higher. No new crop cut beans can reach this market until April since under regulations in Mexico, shippers are not permitted to export new crop cut beans until March 15. It will be several months later before Mexican whole beans arrive here.

GLYCERINE SUPPLY EASY

Barring any unforeseen developments, such as a heavier Lend-Lease demand, there should be ample quantities of glycerine available in the months ahead, according to leading refiners.

CLASSIFIED ADVERTISEMENTS

The rates for advertisements in this section are as follows: Business Opportunities, $1.00 per line per insertion. Situations Wanted and Help Wanted, 50c per line per insertion. Please send check with copy. Address all communications to THE AMERICAN PERFUMER, 9 East 38th St., New York.

BUSINESS OPPORTUNITY

WANTED: 2—Dry Powder Mixers; 2—Pony Mixers; 2—Tablet Machines; 1—Filter; 3—Kettles; 2—Filling Machines. No dealers. Write Box 2353, The American Perfumer and Essential Oil Review.

WELL KNOWN ENGLISH PERFUMER wishes to appoint a U.S. agent to handle post war sales. Manufactures include Perfumes, Toilet Waters, Lipstick, Face Powder and Soap, but initial introduction to U.S. market will probably be for Perfume and Toilet Waters only. Prices are high and lines are not at present known in U.S., although sales in England and other countries are large. Agent must have connection with, and employ salesman calling on, the best class of department store throughout U.S. and should be prepared to purchase goods on credit terms, to handle stock and to despatch and bill them to his customers. Generous advertising and sampling costs will be borne by the manufacturer. Write complete details of qualifications, organization and products handled to Box 2468, The American Perfumer and Essential Oil Review.

SITUATION WANTED

MAN—experienced, wants part time work making cosmetics in Chicago. Write Box 2467, The American Perfumer and Essential Oil Review.

CHEMICAL ENGINEER: Eight years' experience in cosmetic plant management. Work included production and operation, packaging and bottling, maintenance, purchasing and inventory control. Seeking similar position where this background can be used to maximum mutual benefit. Draft deferred. Write Box 2466, The American Perfumer and Essential Oil Review.

AVAILABLE for Position: master perfumer with 30 years' experience in the creation and matching of fine perfumes and compounds from basic raw materials; designing packages, bottles and labels; merchandising and advertising. Thoroughly experienced in all phases of manufacture of perfumes and toiletries. Write Box 2470, The American Perfumer and Essential Oil Review.

CHEMIST: Draft-deferred, young, thoroughly experienced in the manufacture of aromatic chemicals, perfumes and toilet waters. Varied experience as analytical and research chemist in cosmetic and pharmaceutical fields. Write Box 2463, The American Perfumer and Essential Oil Review.

SALESMAN OF EXTENSIVE EXPERIENCE and ability in the Cosmetic, Soap, Drug field (Soap Chemist) with an established trade, dependable, adaptable. Write Box 2472, The American Perfumer and Essential Oil Review.

HELP WANTED

COSMETIC TECHNICIAN: male or female, wanted by manufacturer of cosmetic raw material. Should have broad experience in formulating and manufacturing modern cosmetics of all types, and able to develop practical formulas for new cosmetics incorporating absorption base, modern emulsifiers, wetting agents, sun screens, etc. Chemical education desirable, although not essential. Write in detail regarding education, experience, salary requirements, etc. Box 2469, The American Perfumer and Essential Oil Review.

CONTROL CHEMISTS for night shift (3:00 P.M. about midnight, 5 days weekly). War industry with peace future. Must be capable of initiative and resourceful analyst. Compensation commensurate with qualifications. Location: Philadelphia suburb. Write Box 2471, The American Perfumer and Essential Oil Review.

PRICES IN THE NEW YORK MARKET

(Quotations on these pages are those made by local dealers, but are subject to revision without notice)

ESSENTIAL OILS

Almond Bit, per lb.	3.50@	4.00
S. P. A.	4.75@	5.10
Sweet True	2.25@	2.50
Apricot Kernel	.56	Nom'l
Amber, rectified	1.35	Nom'l
Angelica Root	125.00@	150.00
Anise, U. S. P.	3.85	Nom'l
Imitation	1.75@	2.10
Aspic (spike) Span.	4.10@	5.25
Avocado	.90@	.95
Bay	1.60@	1.95
Bergamot	25.00	Nom'l
Brazilian	10.00@	10.25
Artificial	4.00@	9.25
Birch, sweet	3.35@	5.25
Birchtar, crude	2.25	Nom'l
Birchtar, rectified	4.25	Nom'l
Bois de Rose	5.10	Nom'l
Cade, U. S. P.	1.50@	1.75
Cajeput	2.00@	2.75
Calamus	22.50@	35.00
Camphor, "white," dom.	.35@	.45
Cananga, Java, native	9.00@	11.00
Rectified	10.75@	12.00
Caraway	17.50	Nom'l
Cardamon	28.00@	32.00
Cassia, rectified, U. S. P.	12.00	Nom'l
Cedar leaf	1.25@	1.30
U. S. P.	2.00@	2.10
Cedar wood	.85@	.95
Celery	24.00@	26.00
Chamomile	150.00	Nom'l
Cinnamon	15.00@	32.00
Citronella, Ceylon	1.05@	1.25
Java	3.25	Nom'l
Cloves, Zanzibar	1.70@	1.85
Copaiba	.80@	.85
Coriander	30.00@	32.00
Imitation	10.00@	14.00
Croton	3.00@	3.75
Cubebs	5.25	Nom'l
Cumin	8.50@	10.00
Dillseed	7.00@	7.50
Erigeron	2.15@	2.50
Eucalyptus	1.55	Nom'l
Fennel, Sweet	3.25@	4.00
Geranium, Rose, Algerian	13.00@	15.00
Bourbon	16.00@	18.00
Turkish	5.25@	6.00
Ginger	21.00@	22.00
Guaiac (Wood)	4.50@	6.10
Hemlock	1.50	Nom'l
Substitute	.55@	.60
Juniper Berries	15.00	Nom'l
Juniper Wood, imitation	.75@	.80
Laurel	5.00	Nom'l
Lavandin	8.25	Nom'l
Lavender, French	10.00@	12.00
Lemon, Calif.	3.25@	
Lemongrass	1.35@	1.40
Limes, distilled	7.00@	7.75
Expressed	11.00@	11.75
Linaloe	3.75@	4.10
Lovage	95.00	Nom'l
Marjoram	7.00@	7.50
Neroli, Bigarde P.	300.00@	375.00
Petale, extra	300.00@	340.00
Olibanum	5.00@	5.75
Opopanax	22.00@	38.00
Orange, bitter	4.50@	5.00
Brazilian	1.25@	1.50
Calif., exp.	1.25@	1.50
Orris Root, abs. (oz.)	135.00@	
Artificial	36.00@	40.00
Pennyroyal, Amer.	3.25@	4.10
European	3.15@	4.10
Peppermint, natural	6.00	Nom'l
Redistilled	6.30	Nom'l
Petitgrain	1.60@	2.00
Pimento	5.25@	8.00
Pinus Sylvestris	4.25@	5.00
Pumillonis	4.25@	4.80
Rose, Bulgaria (oz.)	25.00@	32.00
Synthetic, lb.	45.00@	55.00
Rosemary, Spanish	2.00@	2.10
Sage	6.25@	7.50
Sage, Clary	40.00	Nom'l
Sandalwood, East India	6.25@	6.50
Sassafras, natural	2.00@	2.35
Artificial	1.50@	1.80
Snake root	10.00@	12.75
Spearmint	4.00	Nom'l
Thyme, red	2.60@	3.25
White	3.25@	5.00
Valerian	35.00	Nom'l
Vetivert, Java	45.00	Nom'l
Wintergreen	5.25@	8.50
Wormseed	5.25	Nom'l
Ylang Ylang, Manila	38.00	Nom'l
Bourbon type	18.00@	20.00

TERPENELESS OILS

Bay	2.75@	3.00
Bergamot	49.00	Nom'l
Grapefruit	65.00@	
Lavender	28.00	Nom'l
Lemon	40.00@	55.00
Lime, ex.	85.00@	100.00
Distilled	60.00@	67.00
Orange sweet	75.00@	125.00
Peppermint	11.50@	14.00
Petitgrain	3.50@	4.00
Spearmint	5.00@	6.00

DERIVATIVES AND CHEMICALS

Acetaldehyde 50%	1.90@	2.75
Acetophenone	1.60@	1.75
Alcohol C 8	7.50	Nom'l
C 9	13.25@	15.00
C 10	7.75@	12.00
C 11	11.50	Nom'l
C 12	7.20@	8.50
Aldehyde C 8	22.50@	28.00
C 9	32.00	Nom'l
C 10	22.00@	29.00
C 11	22.00	Nom'l
C 12	25.00@	30.00
C 14 (so called)	9.25@	9.75
C 16 (so called)	7.65@	8.25
Amyl Acetate	.50@	.75
Amyl Butyrate	.90@	1.10
Amyl Cinnamate	4.50@	5.80
Amyl Cinnamate Aldehyde	2.75@	5.00
Amyl Formate	1.00@	1.75
Amyl Phenyl Acetate	3.75@	4.00
Amyl Salicylate	.85@	1.00
Amyl Valerate	2.00@	2.75
Anethol	2.00@	2.25
Anisic Aldehyde	3.15@	4.00
Benzophenone	1.15@	1.30
Benzyl Acetate	.65@	1.00
Benzyl Alcohol	.75@	1.00
Benzyl Benzoate	1.10	Nom'l
Benzyl Butyrate	2.25@	3.00
Benzyl Cinnamate	5.15	Nom'l
Benzyl Formate	3.75	Nom'l
Benzyl-Iso-eugenol	10.25	Nom'l
Benzylidenacetone	2.25@	3.40
Borneol	1.80	Nom'l
Bornyl Acetate	2.00	Nom'l
Bromstyrol	5.00	Nom'l
Butyl Acetate	.11@	14½
Cinnamic Acid	3.75@	4.50
Cinnamic Alcohol	3.75@	4.00
Cinnamic Aldehyde	1.75	Nom'l
Cinnamyl Acetate	10.40@	12.00
Cinnamyl Butyrate	12.00@	14.00
Cinnamyl Formate	10.00@	13.00
Citral, C. P.	3.75@	4.25
Citronellol	6.50@	7.00
Citronellyl Acetate	8.60@	9.20
Coumarin	3.00@	3.50
Cuminic Aldehyde	8.00@	11.25
Diethylphthalate	.24	Nom'l
Dimethyl Anthranilate	4.55@	5.00
Ethyl Acetate	.25	Nom'l
Ethyl Anthranilate	5.75@	7.50
Ethyl Benzoate	.90@	1.15
Ethyl Butyrate	.75@	.90
Ethyl Cinnamate	3.25@	3.75
Ethyl Formate	.60@	1.00
Ethyl Propionate	.80	Nom'l
Ethyl Salicylate	.90@	1.00
Ethyl Vanillin	5.25@	6.00
Eucalyptol	2.75@	3.25
Eugenol	2.75@	3.25
Geraniol, dom.	3.50@	4.75
Geranyl Acetate	4.00	Nom'l
Geranyl Butyrate	7.75@	8.20
Geranyl Formate	8.50@	10.00
Heliotropin, dom.	3.35@	6.00
Hydrotopic Aldehyde	15.00@	18.00
Hydroxycitronellal	7.75@	10.00
Indol, C. P.	26.50@	30.00
Iso-borneol	1.00@	1.10
Iso-butyl Acetate	1.25@	2.00
Iso-butyl Benzoate	1.65@	2.70
Iso-butyl Salicylate	2.70@	3.00
Iso-eugenol	4.00@	4.85
Iso-safrol	3.00	Nom'l
Linalool	8.00	Nom'l
Linalyl Acetate 90%	8.75@	10.00
Linalyl Anthranilate	15.00@	
Linalyl Benzoate	10.50@	
Linalyl Formate	9.00@	12.00
Menthol, Brazilian	18.00@	24.00
Methyl Acetophenone	1.55@	1.80
Methyl Anthranilate	2.35@	2.50
Methyl Benzoate	.70@	1.10
Methyl Cellulose, f.o.b. shipping point	.60	Nom'l
Methyl Cinnamate	2.25@	3.50
Methyl Eugenol	3.50@	6.75
Methyl Heptenone	3.25	Nom'l
Methyl Heptine Carbonate	40.00@	60.00
Methyl Iso-eugenol	5.85@	10.00
Methyl Octine Carbonate	24.00@	30.00
Methyl Paracresol	2.50	Nom'l
Methyl Phenylacetate	3.75@	4.00
Methyl Salicylate	.35@	.38
Musk Ambrette	9.50	Nom'l
Ketone	4.50@	9.70
Xylene	1.65@	2.50
Neroline (ethyl ether)	2.00@	3.15
Paracresol Acetate	2.50	Nom'l
Paracresol Methyl Ether	2.60	Nom'l
Paracresol Phenyl-acetate	6.50@	8.50
Phenylacetaldehyde 50%	3.75@	4.00
100%	4.50@	5.00
Phenylacetic Acid	3.00@	3.75
Phenylethyl Acetate	3.00@	4.90
Phenylethyl Alcohol	2.50@	3.00
Phenylethyl Anthranilate	16.00@	
Phenylethyl Butyrate	4.00@	4.25
Phenylethyl Propionate	3.90@	5.60
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Phenylpropyl Acetate	10.00	Nom'l
Santalyl Acetate	20.00@	22.50
Skatol, C. P. (oz.)	5.35@	6.00
Styralyl Acetate	2.50@	3.00
Styralyl Alcohol	9.25@	12.00
Vanillin (clove oil)	2.60	Nom'l
(guaiacol)	2.35	Nom'l
Lignin	2.35	Nom'l
Vetivert Acetate	25.00	Nom'l
Violet Ketone Alpha	18.00	Nom'l
Beta	15.00	Nom'l
Methyl	6.50	Nom'l
Yara Yara (methyl ester)	3.20	Nom'l

BEANS

Tonka Beans, Surinam	.70@	.95
Angostura	2.50@	3.00
Vanilla Beans		
Mexican, whole	9.25@	9.50
Mexican, cut	8.25@	8.50
Bourbon	9.50@	10.00
Tahiti	3.75@	4.00

SUNDRIES AND DRUGS

Acetone	.8½@	.09
Almond meal	.25@	.27
Ambergris, ounce	17.00@	20.00
Balsam, Copaiba	.52@	.54
Peru	1.10@	1.20
Beeswax, bleached, pure		
U. S. P.	.57	Nom'l
Yellow, refined	.52½	Nom'l
Bismuth, sub-nitrate	1.20@	1.22
Borax, crystals, carlot ton	55.50@	58.00
Boric Acid, U. S. P., cwt.	6.95@	7.55
Calamine	.18@	.20
Calcium, phosphate	.08@	.08¾
Phosphate, tri-basic	.09@	.10
Camphor, domestic	.69@	.84
Castoreum	13.00@	26.00
Cetyl Alcohol	1.75	Nom'l
Pure	2.25	Nom'l
Chalk, precip.	.03½@	.06½
Cherry Laurel Water, carboy	5.75@	6.25
Citric Acid	.21	Nom'l
Civet, ounce	28.00@	49.00
Clay, colloidal	.07@	.15
Cocoa Butter, lump	.25½@	.27
Cyclohexanol (Hexalin)	.30@	.50
Fuller's Earth, ton	15.00@	33.00
Glycerin, C. P., drums	.18¼@	.18¾
Gum Arabic, white	.42@	.45
Amber	.14@	.14¾
Powdered, U.S.P.	.19@	.21
Gum Benzoin, Siam	5.00	Nom'l
Sumatra	1.35@	1.40
Gum Galbanum	1.80@	2.00
Gum Myrrh	.50@	.55
Henna, pwd.	.30@	.35
Kaolin	.05@	.07
Labdanum	3.25@	5.00
Lanolin, hydrous	.35@	.36
Anhydrous	.36@	.37
Magnesium, carbonate	.09@	.10¾
Stearate	.24@	.27
Musk, ounce	50.00	Nom'l
Olibanum, tears	.18@	.35
Siftings	.11½@	.13
Orange Flower Water, gal.	2.00@	2.50
Orris Root, African, pwd.	1.10@	1.15
Paraffin	.06¼@	.09
Peroxide	1.10@	1.75
Petrolatum, white	.06¼	.08½
Quince Seed	1.75@	2.00
Rice Starch	.09@	.10
Rose Leaves, red	4.00@	4.10
Rose Water, gal.	6.50@	8.00
Rosin, M. per cwt.	5.35@	
Salicylic Acid	.35@	.40
Saponin	2.00@	2.50
Silicate, 40°, drums, works, 100 pounds	.80@	1.20
Soap, neutral, white	.20@	.25
Sodium Carb. 58% light, 100 pounds	1.35@	2.35
Hydroxide, 76% solid, 100 pounds	2.60@	3.75
Spermaceti	.26@	.27
Stearate Zinc	.30@	.31
Styrax	1.35@	1.60
Tartaric Acid	.64	Nom'l
Tragacanth, No. 1	5.00@	5.25
Triethanolamine	.34½	Nom'l
Violet Flowers	1.75@	2.00
Zinc Oxide, U. S. P. bbls.	.10½	.10¾

OILS AND FATS

Castor No. 1, tanks	13@	
Cocoanut, Manila Grade, c.i.f., tanks	.0835@	
Corn, crude, Midwest, mill, tanks	12¾@	
Corn Oil, distilled, bbls.	.15½	Nom'l
Cotton, crude, Southeast, tanks	12¾@	
Grease, white	.08⅞@	
Lard	.1380@	
Lard Oil, common, No. 1 bbls.	.14@	
Palm, Niger, drums	.0865	
Peanut, refined, tanks	.14⅝@	
Red Oil, distilled, tanks	.12½@	
Stearic Acid		
Triple Pressed	.18⅝@	.19⅝
Double Pressed	.15⅞@	.16⅞
Tallow, acidless, barrels	.14¼@	
Tallow, N. Y. C., extra	.08⅝@	
Whale oil, refined	.1232	Nom'l

SPECIAL ★★★★ FEATURE!

AMERICAN PERFUMER

Running Serially Through 1944 . . . 15 Chapters

THE PRODUCTION CONTROL AND ANALYSIS OF COSMETICS

By MAISON G. de NAVARRE, Technical Editor, American Perfumer, Special Instructor in Cosmetics, Wayne University, etc.

Through special arrangement with the author, the AMERICAN PERFUMER has secured the right to publish this valuable work in serial form, prior to its publication as a book. One or two complete chapters will be printed each month—*in addition to the full, regular contents of the magazine!* The special pre-publication of this book, at this time, is an event of greatest importance to the entire cosmetic industry . . . and is an EXTRA service rendered by the AMERICAN PERFUMER to its readers and subscribers. . . . The first two chapters appear herewith.

A new kind of cosmetic book based on work in the author's own laboratory, as well as in well-known cosmetic factories. All methods are practical and scientific, based on long experience. Minimum requirements are given for starting a laboratory, plus many suggestions on what to do and what to avoid. Every type of cosmetic is described . . . a wealth of material not found in any other book! While the book will be most helpful to technicians with a chemical or pharmaceutical background, it can also be of great help to those not so trained. Scientific equipment of the most urgent type and highly advanced apparatus are described.

With increasing Government activity in the field of cosmetics, it is important to know how to control their quality and to analyze them, thus making sure that the product is of uniform composition. By these methods you can always analyze competitive products and keep posted on what is going on in the industry. The methods are arranged for quick and direct use. They have been tried and found successful. This book is essential for any work in the field of cosmetics . . . for with this volume you need very few other references.

DESCRIPTION OF CONTENTS

Chapter I. **EQUIPMENT AND LAYOUT FOR SMALL TESTING & CONTROL LABORATORY.** The choice of equipment necessary to carry on modest cosmetic control and analysis as outlined in the following chapters. Suggestions for additional equipment, if more complete analysis is desired. Laying out a small chemical laboratory with recommendations for furniture, shelving, lighting, electrical outlets, plumbing, etc.

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Chapter VI. **OILS, FATS AND NON-EMULSIFIED CREAMS.** Liquid brilliantine, solid brilliantine, skin oils, liquefying cream.

Chapter VII. **PASTES.** Toothpaste, depilatory, facial packs, antiperspirant.

Chapter VIII. **SOLUTIONS.** Liquid lotions, hair tonic, astringent, skin freshener, permanent wave solutions, shaving lotions.

Chapter IX. **MUCILAGES.** Hand lotions, wave set, brilliantine, etc.

Chapter X. **SUSPENSIONS.** Liquid powder, acne lotion, liquid make-up, leg make-up.

Chapter XI. **STICKS AND MAKE-UP.** Cake make-up, lipstick, deodorant sticks, antiperspirant, leg stick, perfume sticks.

Chapter XII. **POWDERS.** Face powders, baby powders, talcum powder, deodorant powder, tooth powder, depilatory, foot powder.

Chapter XIII. **THE VALUE OF CONTROL AND ANALYSIS.** Limitations of analysis because of the use of unknown specialties. The value of analysis in control work and in knowing what is currently sold on the market.

Chapter XIV. **TABLES AND CONVERSION FACTORS.** Tables of conversion factors and miscellaneous information.

Chapter XV. **INDEX.**

BE SURE TO READ THIS HELPFUL, PRACTICAL BOOK IN THE AMERICAN PERFUMER — STARTING THIS ISSUE! IF YOU ARE NOT ALREADY A SUBSCRIBER, WHY NOT SEND IN YOUR SUBSCRIPTION *RIGHT NOW*? YOU WILL NOT WISH TO MISS A SINGLE CHAPTER OF MR. DE NAVARRE'S BOOK DURING THE YEAR AHEAD!

Production Control and the Analysis of Cosmetics

by MAISON G. DENAVARRE, Ph.C., B.S.

Technical Editor of the American Perfumer & Essential Oil Review and of Elaboraciones y Envases, Special Lecturer in Cosmetics, Wayne University, College of Pharmacy, Consulting Chemist

THIS BOOK IS DEDICATED TO

MY PARENTS

FOR THEIR LOVE, UNDERSTANDING,
DEVOTION AND SACRIFICES

Preface

Every technician in the cosmetic industry has felt the need for a book that contained most, if not all, of the production control and analytical methods needed in his work. No such book is in existence. In fact, to have enough data at hand that will give this information, the technician must consult numerous books and countless scientific journals.

In this book, the author has assembled a profusion of data from diverse sources, some of which was evolved in his own laboratory and consulting practice. These methods are not the last word in perfection. Indeed every control method in existence is in a constant state of change, similar to those in official compendia. Expert scientists do not agree on the accuracy of the techniques used.

Some will object to the division of cosmetics into powders, pastes, mucilages and so on. But this is really the only basic way to divide them. For even in college analytical chemistry, the work is divided into the two basic types, *wets* and *drys;* there are no other types to offer the student. But in the cosmetic industry, there are several kinds of wets while the drys are limited to powders.

Many—if not most—of the methods are empirical. They cannot help but be that way because we are dealing with complex mixtures that defy resolution or that do not behave according to the known laws of chemical, physical, medical or pharmaceutical sciences. Because the cosmetic industry is big enough and so different from other industries that it must develop its own special methods. Even the Department of Agriculture recognized this when it established a Cosmetic Division within the Food & Drug Administration under the expert leadership of Dr. Dan Dahle. This division in itself has devised many quite efficient methods of analysis for cosmetics that most chemists would say could not be analyzed so completely. It can be and is being done.

Yet a start must be made somewhere. Once the start is made, industry will find the errors. It is hoped that these mistakes are few and that they will be brought to the author's attention for the purpose of making a more perfect next edition.

If this book does no more than to start the cosmetic industry on the road to unify and establish its own production control and analytical methods, it will have fulfilled all of the authors hopes. In this way, the industry will start to evolve a standard reference to which new and inexperienced technicians may turn with confidence.

M. G. deNavarre

February 29, 1944
Detroit, Michigan

Acknowledgments

The methods for identification and analysis described come from many sources. The United States Pharmacopoeial Convention has allowed direct quotations from the *U.S.P.* XII. The American Pharmaceutical Association gave permission to quote from the *National Formulary* VII. The Association of Official & Agricultural Chemists permitted the author to quote from the Official Methods of the A.O.A.C. and from the *Journal of the A.O.A.C.* The Toilet Goods Association has availed a complete set of its standards on cosmetic materials for direct quotation. Besides these, methods appearing in publications of the American Chemical Society such as *Chemical Abstracts* and *Industrial & Engineering Chemistry, The Analyst* (London), *The Pharmaceutical Journal* (London), *Quarterly Journal of Pharmacy & Pharmacology* (London), AMERICAN PERFUMER & ESSENTIAL OIL REVIEW, *Journal American Pharmaceutical Association, Drug & Cosmetic Industry, Oil & Soap, Drug Trade News* and numerous others, have been freely used. As a result, the author takes no credit for the work of others. His job has been solely one of assembling the many data and presenting them in usable form.

In addition, the author acknowledges the help of the many technicians, manufacturers and suppliers who have cooperated in making this work possible. Special thanks are given to Dr. Dan Dahle, Lt. Colonel Edward M. Hoshall, Irwin I. Shupe, Dr. Justin L. Powers, Dr. Harry F. Kelly.

Last, but not least, the author acknowledges the help of his two assistants, Frederick J. Mittelstadt and Richard Maicki, who worked out many of the kinks in analytical procedures, and of his secretary, Bernice Larabell who had the difficult task of transcribing scribbled, printed or typed data, a good deal of it gathered over many years and in various states of legibility. To Harland J. Wright, Publisher and Editor of the AMERICAN PERFUMER & ESSENTIAL OIL REVIEW, special thanks for his patience and painstaking skill in the physical process of manufacturing this book from the manuscript.

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CHAPTER XV. INDEX.

CHAPTER I

Equipment and Layout for Small Testing and Control Laboratory

The cost of the equipment required to set up a small testing and control laboratory is not as great as one might suspect. It is of course possible to spend a great deal of money on elaborate equipment. It is nice to have and certainly gives the premises an *important* appearance. For the most part, a laboratory is not intended to be a show place, but a place for work.

In selecting glassware, due thought should be given to buying that type or quality which insures reasonable exactness or precision. For instance, a great deal of foreign made glassware has been sold at "bargain sales" but it usually does not resist heating like Pyrex or Kimble glassware. These bargains often turn out to be duds. Buy only a recognized standard quality.

The following list of basic equipment includes apparatus most commonly used, fulfilling the requirements of diversity of analysis.

1 Analytical Balance (sensitive to 1 milligram)
1 Weights Analytical
1 Trip Scale and Weights
2 Casserole, 500 ml.
3 Porcelain Dishes, 62 mm.
3 Gooch Crucibles, 25 ml.
3 Evaporating Dishes, 75 mm.
1 Platinum Crucible (at market price: approx. wt., 10 g.)
4 "Pyrex" Beakers, 100 ml.
4 "Pyrex" Beakers, 250 ml.
4 "Pyrex" Beakers, 400 ml.
24 Reagent Bottles, 4 oz.
12 Dropping Bottles, 60 ml.
No. 1 Glass Tubing, 5 mm.
No. 1 Glass Tubing, 7 mm.
12 Glass Rods, 5 mm.
3 Pipettes, 10 ml.
3 Pipettes, 25 ml.
1 Kipp Generator
24 Test Tubes, 6 x 5/8
24 Test Tubes, 3 x 3/8
1 Filter Flask, 500 ml.
2 Nessler Tubes 50 ml.
2 Nessler Tubes 100 ml.
1 Nessler Tube Support
1 Graduated Cylinder 10 ml.
1 Graduated Cylinder 50 ml.
2 Graduated Cylinders 100 ml.
2 Graduated Cylinders 500 ml.
1 Dessicator (size 150 mm.)
2 Flasks, Distilling, 250 ml.
4 Erlenmeyer Flasks, 125 ml.
4 Erlenmeyer Flasks, 250 ml.
3 Bunsen Funnels, 65 mm. 60° pyrex
2 Thermometers —5° to 110° C.
1 Thermometers —20° to 300° C.
3 Calcium Chloride Tubes
3 Filter Tubes
12 Watch Glasses, 3 in.
1 Filter Pump
1 Pliers
1 Screw Driver
2 Sand Baths
1 Sieve, 60 mesh
1 Sieve, 100 mesh
1 Sieve, 200 mesh
2 Hot Plates, 115 volts
3 Spatulas, stainless steel—6 in.
2 Iron Stands, with rings
1 Steel File, 5 in.
2 Iron Tripods
1 Steel Crucible Tongs
1 Burette Support and holder
1 Funnel Support
1 Test Tube Rack
1 yd. Rubber Sheeting
10 ft. Rubber Tubing
8 ft. Gooch Tubing
3 Test Tube Brushes
1 Burette Brushes
1 Large Camel Hair Brush Labels, Assorted
2 Test Tube Clamps
2 Beaker Clamps
2 Condenser Clamps
2 Condensers (1 reflux, Hopkins or Friedricks type, one Liebig type)
2 Clamp Holders
3 Pinch Clamps
1 Bag Assorted Corks (100)
1 lb. Assorted Rubber Stoppers
1 Drying Oven (with glass inner door preferred)
1 Box Filter Paper, 12.5 cm (fine)
1 Box Filter Paper (coarse)
3 Pipe Stem Triangles
2 Wire Gauze
1 Peg Board (for washed glassware)
1 Sharp Cutting Knife
1 Cork Screw
1 Yard Tight Muslin
1 oz. Unbleached Wool
1 oz. Sterilized Absorbent Cotton
1 Glass Plate (one side frosted), 12" x 12" x ¼"
1 Fire Blanket
1 Horn or Plastic Spatula
1 Porcelain Mortars & Pestle
6 in. Platinum Wire, No. 28 (at market price; wt. per ft. = .56 g.)
2 Volumetric Flasks, 50 ml., 100 ml., 250 ml.
1 each Volumetric Flasks, 500 ml., 1000 ml.
2 Specific Gravity Bottles, 25 ml.
2 Separatory Funnels, 125 mm.—Squibb Type
1 Bunsen Burner, Tirrill Type
1 Bunsen Burner, High Temp.

Assorted Chemicals

1 Tube Red and Blue Litmus Paper
1 Tube Mercuric Bromide Paper
1 Tube Methyl Orange Paper
1 Tube or Roll Universal Indicator Paper
1 Tube Lead Acetate Test Paper
1 Melting Point Apparatus
1 Melting Point Thermometer
1 Volatile Acid Apparatus
1 Sulfonated Oil Moisture-Determining Apparatus
2 Hubbard Specific Gravity Bottle

1 Color Comparator for Oils
2 Sulfonated Oil Digestion Flasks
2 Unsaponifiable Fat Residue Extraction Tubes
2 Iodine Number Dishes
1 Titer Test Thermometer
2 Extraction Assembly, 100 ml.
1 box Extraction Thimbles
2 Double Boilers
1 Wash Bottle (1000 cc. size)
12 Pyrex Stock Bottles (1000 cc.)
1 Fire Extinguisher for Chemical Fires
1 1 cc Pipette
1 5 cc Pipette
1 10 cc Pipette
1 20 cc Pipette
1 50 cc Pipette
6 Droppers
1 Dispensing Bottle for Distilled Water
1 Wall Thermometer
1 Cobalt Glass 3″ x 3″

DESIRABLE BUT NOT SO ESSENTIAL

Nesslerimeter
pH Meter
Penetrometer
Viscosimeter
Mobilometer
Microscope
Ultra Violet Lamp
Centrifuge
Electric Heater & Thermostat
Large Hot Plate
Colorimeter Photo Electric
Stop Watch
Tintometer
Ice Box or Deep Freeze Cabinet
Turbiditimeter
Tensiometer
Electric Furnace
Refractometer
Polorimeter
Microphotographic set-up
Kjeldahl unit
Microfilm projector
Vacuum Pump
Vacuum Dessicator
Water Still
Hobart Mixer
Lightnin' Mixer
Colloid Mill—1 gallon
Hygrometer
Homogenizer
Ointment Mill
Laboratory Pulverizer
Oven Thermostat

The equipment requirements will vary with the organization, the type of cosmetics made and the amount of analysis contemplated. Some will be able to get by with considerably less equipment than others, particularly where there is but one chemist to do all the production control, analysis and new product development.

A laboratory should try to have enough glassware on hand to continue functioning even if one piece of glassware be broken—as it will. A large surplus is unwise. Buy enough to last at least a month, and buy monthly.

While it is not to be recommended that all broken glassware be repaired, much can be salvaged that would otherwise be thrown out. A chipped graduate can be made to look like new if it is cut off evenly around and fire polished. Broken stopcocks can be repaired particularly on calibrated items like burettes. Pyrex and Kimble ware require a very high temperature to fire polish, hence cannot often be salvaged.

Other things like the broken bases of graduates can be repaired by placing the broken base in a larger, flat metal cap and filling it with wet plaster of paris. In fact, this heavier base gives the graduate greater upright stability.

Don't let the laboratory collect a lot of broken stuff, or it will look like a junk shop. But it is not necessary to be wasteful; remember the laboratory is usually run on a budget that is none too large at best.

Publications such as the *Chemist Analyst, Journal of Chemical Education, The Laboratory* and *Cenco News Chats* usually carry short articles on repairing broken glassware, how to prevent breakage or how to get more use out of what you already have. Consult them freely.

LOCATION OF LABORATORY

The average chemical laboratory, whether it be in the cosmetic industry or not, has often been stuck away some place in the attic or in the basement—a place where it is either too cold or too hot, where the lighting may be poor or the facilities for plumbing and electrical outlets are limited. In other words, any otherwise unusable place is good enough for the chemist and the laboratory.

This is wrong because so many of the reactions involved in chemical analysis and so much control work require adequate lighting; unless such lighting is had, the results may be questionable. A sufficient number of electrical outlets must be available because much of the equipment now used is electrically operated. There must be running water for distillations or for use in washing and so forth. The room should be kept at normal temperature.

It is best to locate the laboratory on the side of a building where there will be daylight most of the day, for no other type of lighting approximates daylight, regardless of what is claimed for it. Various types of bulbs are said to duplicate daylight, but anyone acquainted with color control of face powder by visual observation, for example, will realize how inadequate artificial lighting is as compared to real daylight.

LIGHTING

Good lighting is essential. The walls should be painted in a light color such as ivory, light green or light blue. These colors, particularly the first, have a high light reflectance. They work well with fluorescent lighting. But if much make-up work is done as in a factory specializing in lipstick for example, it is wise to use geranium red paint of a type that will not show smudges for about a height of 3 feet up from the floor. Even the floors should be painted a geranium red; a red cement or asphalt compound may be used if preferred. The ceilings can be white or an off-white.

If the laboratory is small and it is desired to make it look large, two colors may be used to advantage as they are used in homes. Thus, opposite walls should be of the same light color, but the walls at right angles to each other should be of different and darker colors.

Pleasant surroundings will make the work easier and keep the laboratory workers in a better frame of mind. A pleasant laboratory can be shown off to visitors. For

no matter how much work is done in a laboratory, it should not be a sloppy, dirty place, accumulating dust.

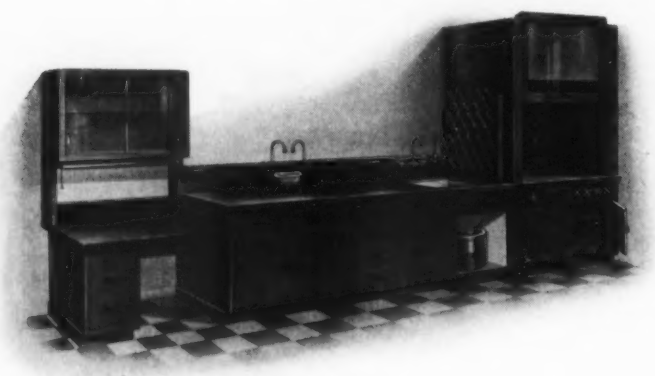
THE FLOOR

If the laboratory floor is made of cement, ribbed rubber runners may be used. They can be replaced when worn, thus keeping the floor always looking new. Better than replacing is to lay a second layer over the first, because *then* you get real relief for tired feet that have to stand for 8 hours in a limited space. There is available a material with a base of sponge rubber and a face of hardened flooring that is laid like asphalt tile. It's nice on feet, but seems to be of questionable value. The blocks seem to come out, they are hard to replace and yet look right. A double layer of ribbed rubber matting has worked well in the writer's laboratory for a number of years. Even a single layer has prevented many flasks and beakers from breaking when accidentally dropped.

Where there is a wood floor, it is a good idea to have rubber flooring because it saves the floor. If wood is to be used, select a hard wood. Lacquering is preferred by this author, although many recommend simple oiling. Oiling is untidy looking at best, whereas lacquer keeps the wood looking bright and clean, at the same time it aids in keeping dust down.

SHELVING

A laboratory needs a lot of shelving and enclosed cabinets. There should be a decent sized book case to begin with. Then shelves for the reagents you will be using. Shelves for samples to be tested or that are "on test." Shelves for tested items. As the number of tested items grows, so will the accumulation of samples. These should be saved for at least five years by packing in standard cardboard containers and keeping in a suitable storage space.



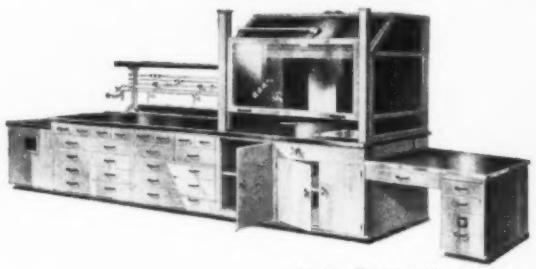
Courtesy E. H. Sheldon & Co.

Figure 1. Metal Laboratory Table with Hood

The facing and fronts on the shelves may be painted or lacquered, but the parts on which the bottles will stand are best if stained a desirable color. Lacquer may be applied if desired, but it has the drawbacks of paint, which comes off in the course of use, leaving unsightly rings as a rule.

Shelves intended for storage of chemicals or raw materials should not be exposed to direct sunlight. Many substances decompose on continued exposure to the direct rays of the sun. Set these shelves in another corner or in a stock room if available.

Shelves should be wide enough and far enough apart to accommodate equipment that is only occasionally used, such as a microscope, penetrometer, mobilometer, pH meter and others. Set aside in this way, the equipment is not buffetted around and as a result is not only better looking, but also lasts longer.



Courtesy Kewaunee Manufacturing Co

Figure 2. A Wood Laboratory Table with Hood

SINK

If you anticipate your needs properly, you will use an earthenware sink. Lead lined sinks are misfits at best. Certain stone sinks work very well, too. But don't use an ordinary porcelain finish type of sink.

The sink should be big enough and deep enough for many uses. The fittings should be large enough to allow the draining of the miscellany of stuff that will be finding its way down the drain. This pipe should be a ceramic pipe all the way to the sewer drain . . . if you don't want trouble at a future date. Many has been the leaky drain pipe located between walls or floors resulting from an infraction of the rule that the whole line should be of earthen material and not cast iron.

A good sized drain board is a useful attachment to the sink. Over the drain board should be hung a peg board for washed glassware, to drain and dry in the air.

A cabinet may be built around and under the sink to hide the under side. This space can be used for storage.

THE LABORATORY TABLE

No matter what is said about a laboratory table, it is going to be wrong. There are the proponents of metal and of wood. There are advantages in both; each has its limitations.

Metal is very nice looking. There is a certain trimness about it that cannot be disputed. It is particularly useful in laboratories where such control or analysis is maintained that does not produce acid or solvent fumes. For no matter what is claimed for it, even stainless steel slowly gives way to the combined action of acid and solvent fumes that are encountered in laboratories doing extensive analysis. Metal suffers from sharp knocks; it gets squeaky unless properly maintained.

Hardwood on the other hand is more or less a fire hazard, although some may be treated to retard fire. While it can be dogged up to be very nice looking, you can't beat metal in this regard. The orthodox gray, natural wood or black colors are anything but bright.

But wood can take more abuse than enameled metal. It doesn't rust; it won't squeak to the extent that metal does. It is somewhat more bulky. Fumes don't particularly affect it. It has given excellent service in the largest laboratories in the country.

So take your choice. Figure 1 shows a metal unit while Figure 2 illustrates a wood unit of about the same type. In any event, either a stone or asphalt top is more desirable than a wood top. If the layer of asphalt *is ruined* in one way or another, you can always have another one put on. This, however, is not so easily done with a thick wood top as with the asphalt.

You might want to build your own table. This can be done, too, somewhat less expensively than buying a ready made one, particularly if you buy ready built floor units such as are made by some lumber companies for kitchen use. You can build any size or shape you want. But if you do this, get an earthenware or stone sink and build around it. You can paint or lacquer any color you wish, but don't use rubber paint if you will handle oils, fats or solvents. The fats used in cosmetics together with the solvent combinations raise the dickens with rubber paint.

Be sure the table top is strong enough to hold up heavy equipment. Make the corners round. Get enough electrical outlets built into it, a gas line and a water line. All these things are essential.

THE HOOD

Not all laboratories need a hood. If you expect to produce obnoxious solvent and chemical fumes, such as those of chloroform or carbon disulfide, you had better install a hood with a good air suction fan. The cheapest way to get a hood is not to make it for yourself. If you do, you will probably lose a suction unit by corrosion within a year or two after it is put in. Get a hood already made. They are so built to overcome all these shortcomings, although admittedly they are not perfect or everlasting.

Chloroformic extractions that are evaporated to dryness are best evaporated in a hood, otherwise the open gas flame changes the fumes of chloroform into phosgene, a toxic war gas, minute amounts of which produce painful and nauseating headaches.

Ashing unknown residues containing mercury can produce serious mercury poisoning unless done in a well ventilated hood. This author can attest to the veracity of the above stories. They have happened in his laboratory, particularly with new and inexperienced assistants.

THE DESK

The chemist should have a regular office desk in the laboratory together with a comfortable chair. All figuring, records and other writing is done at the desk, as well as reading of journals. Interviews with suppliers are often held in the small laboratory and a desk gives the whole place a more business-like appearance. It is as essential a tool as a glass beaker.

DOORS

It is advisable to have glass doors for daytime use. The advantages are manifold. But there should also be a fire door for closing the laboratory off for the night, in addition to the glass door. The glass door should swing out.

If a fire door is used, the handle on the usual or daytime door should be of the hook type rather than a knob. With a hook for a handle, the door can be opened with the crook of the arm when both hands are full.

VENTILATORS

It is almost essential to have a ventilating fan blowing air outside from the laboratory. If obnoxious fumes fill the place, the fan can clear them out in a hurry. On warm days, it can help in keeping the laboratory livable without strong air currents being formed.

FIRE FIGHTING

Any laboratory is a fire hazard. Some manufacturers are now installing a carbon dioxide system of fire control to replace the time honored water sprinklers. Water is not always a desirable thing to sprinkle over the entire laboratory because it may cause a lot of fires to burn with greater intensity. In fact, the only safe way to fight such a fire is to blanket it in one way or another to cut off the supply of oxygen. Carbon dioxide systems do this effectively without damaging the whole laboratory since the gas can be drawn out once the fire is under control.

If possible such a system of continuous fire control is a desirable addition to the layout and integral part of the laboratory; if unavailable, a sprinkler system may do.

Fire extinguishers of two or three types should be posted at convenient points throughout. An ordinary water type finds a lot of use in combatting simple fires. The carbon tetrachloride type should also be available. The carbon dioxide type is practically a must in all laboratories. Some laboratories prefer the foam type to the carbon tetrachloride type. They make an awful mess once the extinguisher goes off. Of course there should always be a bucketful of sand at a handy spot. The choice of extinguishers is dependent on hazard involved as well as personal preference. Consult your local fire department.

CHAPTER II

Specialized Equipment

For those laboratories employing chemists, special equipment for more elaborate checking and analysis

CHAPTER II

To say that certain specialized equipment is more important than any other is foolhardy, for importance depends on the work being done and the extent to which it will be carried out. Obviously, each laboratory is the best judge of the need for one instrument as compared to another.

There are certain things however that should be in rather general use. These are reviewed first, followed by more recent innovations requiring very special skills.

The *ice box* and *electric oven* are essential for determining the behavior of a product under various conditions of temperature. Since both quickly find many uses other than temperature stability, each should be of reasonable size. The ice box should have a minimum capacity of five cubic feet whereas the oven should be at least 12″ x 12″ x 12″. The oven should have a glass door additional to the regular door as illustrated in Figure 3. This enables

Courtesy Central Scientific Co.

Figure 3. Oven with Glass Door

observation of changes taking place in the oven without unduly disturbing the temperature inside. Where there is a question about the temperature variations within the oven, an inexpensive recording thermostat selling for less than fifty dollars can be installed. It will give a permanent record of the temperature inside the oven during use.

The average ice box can easily be cooled to 0°F, especially within the ice cube department. Some can go to five or ten degrees below zero, but these are unusual temperatures to have to achieve, unless the product under test is going to a very cold climate, or unless it must meet military specifications. In this line, one can make a pretty good guess regarding stability if an antifreeze is used. If the antifreeze is alcohol, Table I will indicate the amounts of alcohol required to give cold protection at different temperatures.

If either glycerine, carbitol or propylene glycol are used as in the case of hand lotions or creams, Tables II and III give cold protection data.

The oven can also serve as an incubator for the determination of mold, yeast or bacterial fermentation as well as a drying oven in chemical analysis. Get one that has pretty good temperature control.

The ice box is sometimes supplemented by a deep freeze unit. The only products that this author has found need for testing at so low a temperature are military products

Table I

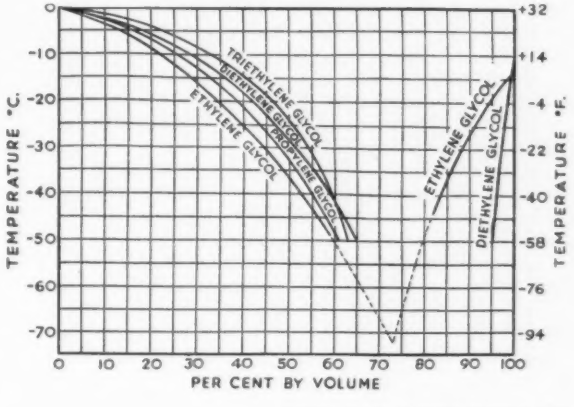
Freezing Points of Ethyl Alcohol—Water Solutions

ALCOHOL % BY VOL.	°F.	°C.
5	+29.3	— 1.5
10	+25.7	— 3.5
15	+21.5	— 5.8
20	+16.7	— 8.6
25	+10.7	—11.8
30	+ 4.5	—15.2
35	— 2.2	—19.0
40	— 9.0	—22.8
45	—16.2	—26.8
50	—23.4	—30.7

(Courtesy U. S. Industrial Chemicals, Inc.)

Table II

Freezing Points (Initial Crystallization) of Aqueous Solutions



Courtesy Carbide & Carbon Chemicals Corp.

Table III

Freezing Point of Glycerin—Water Mixtures

% GLYCEROL BY WT.	FREEZING POINT °C.	°F.
10	— 1.6	29.1
20	— 4.8	23.4
30	— 9.5	14.9
40	—15.4	4.3
50	—22.0	— 7.4
60	—33.6	—28.5
70	—37.8	—36.0
80	—19.2	— 2.3
90	— 1.6	29.1
100	+17.0	62.6

Bosart and Snoddy (*Jour. Ind. and Eng. Chem., 19*, 506 (1927)) modified in accordance with suggestion of Procter and Gamble.

calling for stability at −40° F. The equipment is expensive but may find some use in testing specialized products, particularly those of the future, if they are to be shipped by air according to the shortest routes.

pH TESTING

For routine checking where variations of up to 1 pH unit is not important, a universal indicator set such as shown in Figure 4 is good enough. More often, however, an electrical unit such as a Beckman, Coleman (Figure 4-A), Leeds & Northrup or Helligé is desired. These models all cost between one and two hundred dollars, and are effective over the entire pH scale giving readings that should be capable of checking to 0.01 pH unit. All can be operated with no previous training other than that given by the chemical equipment salesman. (For a more complete description of pH testing and equipment, see deNavarre, "The Chemistry & Manufacture of Cosmetics.")

OPTICAL TESTING METHODS

In this group of instruments are the nesslerimeter, photoelectric colorimeter, tintometer, turbiditimeter, refractometer, polarimeter, microscope and microprojectors.

The nesslerimeter (Figure 5) is a simple colorimeter for either color control or analysis, suitable for clear liquids or liquids with only *slight* turbidity. One tube is filled with the standard color and the new batch of product is put into the other tube. The eyepiece divides the observed field in half, one part being the color of the standard and the other half the color of the solution being tested. The height of the column of solution under test must be exactly the same,

Figure 4. Helligé Colorimeter pH Indicator Set

as must the source of light. The standard solution should be made according to the color standards given in the USP XII using inorganic materials, since organic colors tend to fade in time more than inorganic colors. There are many versions of the nesslerimeter which is but a colorimeter utilizing nessler tubes rather than special cylinders. As a result, it is inexpensive to buy and to maintain (since special bore tubes like hand made wedges cost a considerable amount of money). Yellow solutions are difficult to match properly because the naked eye is a poor judge of variations in the intensity of yellow coloration. This also applies to photoelectric equipment, but here use of special standard filters overcomes the discrepancy.

A Klett type colorimeter (Figure 6) is somewhat more expensive. It is a more compact unit requiring much smaller amounts of liquid for testing purposes. By the use of a special light attachment, it may be converted into a nephelometer which is used to check either the turbidity or opalescence against a standard either in control or ana-

Courtesy Fisher Scientific Co.

ABOVE & BELOW: Figures 4-A. Beckman & Coleman pH Meters

Courtesy Wilkens-Anderson Co.

lytical procedures. Replacements are more expensive.

The photoelectric colorimeter simply overcomes the human factor by using a sensitive photoelectric cell which measures the variation in color by measuring the intensity of light transmission between the source and the photo-

Courtesy Fisher Scientific Co.

Figure 5. Nesslerimeter

Figure 6.
A Bausch & Lomb Direct Reading Colorimeter—Klett Type

Figure 7.
Helligé Turbidity Meter

electric cell. The output of the photocell is multiplied within the instrument and the reading noted. This type of instrument gives red, yellow and blue values similar to the tintometer. Thus far, photoelectric colorimeters have not been well adapted to color control of cosmetics excepting clear solutions. The reflectance meters do not seem to be suited either. More work will have to be done either to learn how to use the instrument properly or to make a new adaptation of the reflectance meter.

There is a turbidity meter in existence which can be used to determine clarity of liquids or for that matter it can be used somewhat like a nephelometer. It is shown in Figure 7.

The tintometer has found by far the widest acceptance as an analytical and control instrument in cosmetic practice. It is the only instrument whereby one can check the color uniformity of make-up cosmetics with any degree of success. It has the failing in that the human eye, instead of

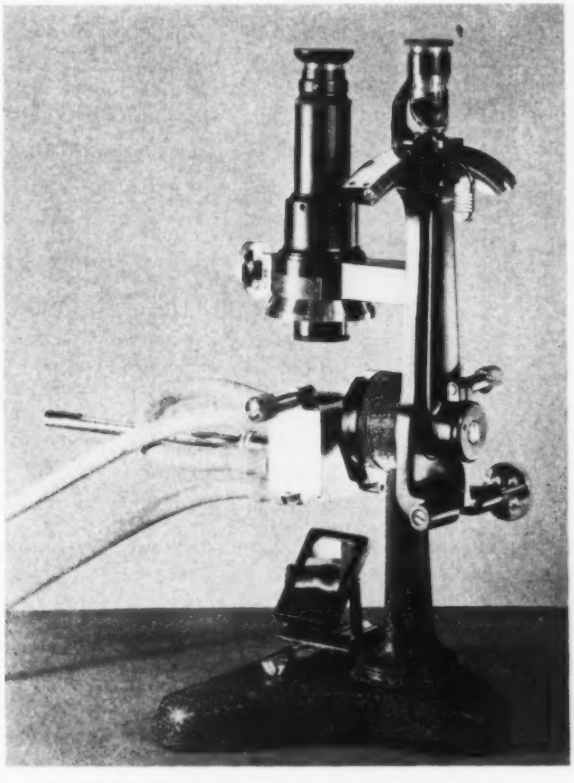


Figure 8. Spencer Refractometer

a photoelectric eye, has to be used. In any event, such an instrument can give read, yellow and blue readings only. Each colored product has a certain red, red-yellow, red-yellow-blue, blue-red, blue-yellow, yellow or blue value. Standards have to be worked out in advance to get data from which it is possible to know what pigment or color has to be added to adjust the shade.

The same set of color standards has to be used at all times or variations will creep in. If one color glass is broken, the whole system has to be re-calibrated. At best, the tintometer is equal to a good visual comparison when it comes to opaque colored cosmetics. It is a good double check on the unaided human eye with its inherent inaccuracy and fatigue.

Two other instruments used in control or analytical work are the refractometer and polariscope. Both instruments shown in Figures 8 and 9 are most effectively used in identification of pure substances or natural materials with known refractive indices or optical rotation. Vegetable fats and oils, essential oils, menthol, camphor, sugars and solvents are but a few of the things that can be identified. The instruments can also be used in control work in some cases where a mixture of materials used in a particular

Courtesy Fisher Scientific Co.

Figure 9. Polariscope, Schmidt & Haensch, Half-Shadow, Mitscherlich, with Laurent Polarizer, 200 mm. size. This polariscope is recommended for general polarimetry and saccharimetry, for students' use, for clinical, diagnostic and for industrial use.

formula manifest a definite optical rotation or refractive index. The reading for the mixture can be used in controlling composition of finished goods. It is also possible to determine which of the several ingredients might be present in an incorrect amount by making suitable determinations in advance and noting the variation in reading as the ingredients are increased or decreased. It is true that one ingredient may counteract the rotation or refraction of another. As a result, this method of production control has considerable limitation, although it does find use in industry. Its major value comes in checking the purity or quality of raw materials.

Neither instrument requires special skill but, like all other mechanical devises, it takes a certain amount of "know how" that can be acquired through experience. These two instruments are not commonly found in the cosmetic laboratories, excepting in raw material control laboratories.

The microscope, on the other hand, is very often a right hand to any control chemist. With the proper instrument it is possible to do many things. I recall one instance where it was important to know how a competitive face powder maker obtained the particular tint. A microscopic examination revealed the presence of three colors, an iron oxide, a particular red and orange. In addition, it showed that two of the colors were well and evenly distributed, while

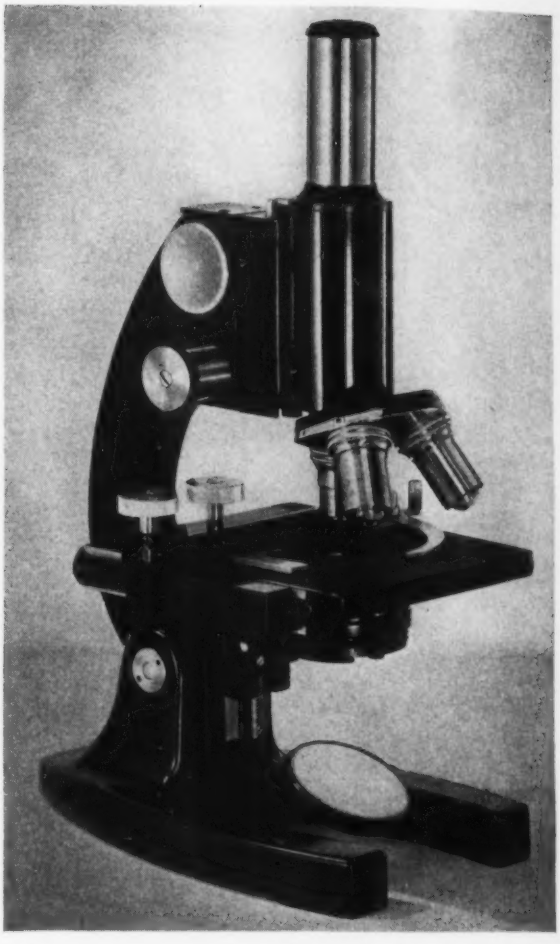


Figure 10. Bausch & Lomb Laboratory Microscope

the third was loosely mixed in. As a result, the powder had one appearance in the box and another on the skin. Without a microscope, it would have been impossible to have learned this.

In analysis, the microscope enables the observer to watch the development of certain crystal formations when questionable materials are treated with suitable reagents on a microscope slide. Triethanolamine, for example, can be readily identified in this way.

Face powder manufacturers all have their own specifications for a particular type of talc most suitable in their face powder. A quick look through the microscope will establish the quality as desirable or not.

Emulsion stability is a function of particle uniformity. It is essential therefore that this uniformity be known before packaging any emulsion by looking it over through the microscope.